The Builder.

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The Workmen's Compensation Bill.

THE Bill to amend the Workmen's Compensation Acts has now been printed, and it may be useful to consider shortly how it proposes to amend the law as regards compensation to the workmen of those engaged in building and engineering undertakings. Buildings are now brought within the scope of the measure without any limitations whatever; the employment need only be "on or in or about a building which is being constructed, altered, repaired, decorated, or demolished by the undertakers," or even "away therefrom," if it is proved that the absence of the workman from such building was due to the nature of his employment at the time of the accident. It will be observed that not only are all restrictions, such as the height of the building, the use of scaffolding and of machinery, thus removed, but the operations to be carried on upon the building have been so amended as to carry out what the House of Lords stated in one case to be the intention of the Act—that is to say, to cover all the phases in the life of a building. In the defining clause moreover, the period of the birth of the building, as far as the Workmen's Compensation Act is concerned, is also determined, as the word "building" is to include "the site of an intended building," and the construction of a building is to include "the work of preparing for and laying the foundations of an intended building." The "undertakers," in the case of a building, are to be "the persons undertaking the construction, repair, decoration, or demolition."

It will be seen that the law will be greatly simplified if the above amendments are adopted, as, in addition to the limitations above mentioned, the cross-references to machinery used in building operations by reference to the Factory Acts have also been abolished, but all builders will in future be included in the Act. We have in former papers pointed out that, although the Departmental Committee advocated this extension of the Act, they were fully alive to the drawbacks involved in including the class of very small builders in the absence of a system of State insurance, and their recommendation seemed based on the difficulty of suggesting any satisfactory limitations which would not involve the amount of litigation that has already been experienced. The objection to the proposed extension still remains that the remedy given to workmen when the employer is impecunious is not only valueless but is even injurious, since both parties may become involved in the costs of useless litigation if an attempt is made to enforce it.

In the Bill now under consideration the definition of an "engineering work" has also been amended and extended. It is to include "any railroad, harbour, dock, pond, inland navigation, road, embankment, sewer, gas or water works, well, telegraphic line, or electric line or work, or part thereof, which is being made, laid, altered, repaired, demolished, or removed." "Telegraph line" is defined by reference to the Telegraph Act, 1878, and "electric line or work" by reference to the Electric Lighting Act, 1882. It will be observed that the engineering undertakings to be within the Act are now specifically enumerated, and the uncertainty involved in the wording of the existing Act, "any other work for the construction, alteration or repair of which machinery driven by steam, water, or other mechanical power is used," has been avoided, but the use of machinery no longer remains a condition necessary to bring the undertaking within the Act.

We do not propose in the present article to discuss this proposed measure in any detail, although some of its provisions as at present drawn are open to criticism; thus the Committee recommended that, if the employer was to be made liable over an increased area—that is to say, when the workman was engaged on his business but off his premises—this should not be the case under section 4 of the Act, which imposes liability upon an undertaker for his sub-contractor's workmen. Clause 5 seems directed to carry out this suggestion, but the wording does not sufficiently clearly indicate that in such an event an accident must have occurred on or in or about the undertaker's own premises. The definition of the undertakers of a quarry by reference to the Factory and Workshop Act, 1901, as the occupiers thereof, is extremely unsatisfactory, since no definition of

"occupation" occurs in that Act; and it has already been expressed that employers of men engaged in quarries are very often not the "occupiers" in the ordinary sense, but independent contractors sending to the quarries to get out or cart away a limited amount of stone. We have frequently urged that the definition of "undertakers" adopted in the case of docks, wharves, quays, and warehouses should be adopted in the case of quarries, viz., "the person having the actual use or occupation" of the premises, since this covers such a temporary occupation as that above described.

The Bill contains important innovations in regard to compensation. Workmen over sixty years of age can be employed under contract specifying the maximum amount of compensation they are to be entitled to in case of accident or death, but the minimum compensation is prescribed by the Bill. Similar provisions are also introduced in the case of workmen specially liable to accident from age or infirmity; whilst workmen injured under twenty-one years of age, and whose average weekly earnings are less than 20s., are to be compensated up to 50 per cent. of their earnings, provided this does not exceed 10s. a week.

We should have been pleased to find some such limitations as the above imposed on the compensation to be paid to men only casually employed, as the full compensation is very hard on employers only employing a hand casually; but the only provision in the Bill dealing with this question is that when they have not been employed for four weeks by the same employer, the compensation may be assessed on the basis of the amount earned by persons in the same grade and the same district.

There are other important provisions in the Bill, notably those dealing with the reference of questions to medical referees, which however we need not here comment upon.

TALL CHIMNEY CONSTRUCTION.

ONE of the most striking features of a manufacturing town is its forest of tall chimneys, rising up from the lower buildings and standing in clear-cut silhouette against the sky, like poplar-trees amid a dense growth of brushwood. And though at times a more appropriate simile would appear to be that of pall-bearers to a city shrouded in gloom and fog, yet even then their weird and weather-stained outlines are by no means lacking in a certain impressive dignity, such as appertains to erectness and strength.

From an artistic point of view, however, the capabilities of a factory chimney are not particularly remarkable. The structure is too obviously utilitarian to lend itself to pretentious decoration. Anything of the kind, in fact, would be out of place. Simplicity is the true keynote of chimney design, and chimney shafts treated in a plain and simple manner will prove not only more appropriate to their functions, but more in accordance with their proportions and more in harmony with their environment.

The object of a chimney shaft is two-fold—in the first place, to induce a draught of air sufficient to cause and maintain perfect combustion of the fuel in the furnace to which it is attached; and in the second place, to discharge the gaseous products of combustion at such a height above the ground as shall render them unobnoxious to the inhabitants of adjacent tenements and harmless to vegetation, etc., in the vicinity generally. An insufficient current will cause incessant toil in firing, and will produce great volumes of black smoke—the sure indication of faulty combustion.

The problems which present themselves in connexion with the subject may be enumerated under four heads, viz.:—

(1) The internal capacity, and
(2) The height of the chimney;
(3) The pressure on the foundation, and
(4) The stability as regards wind pressure.

Each of these points is deserving of consideration, and it will perhaps be desirable to deal with them in turn.

The internal capacity of a chimney is obviously governed by several factors, such as the type and size of boiler, the area of furnace, the kind of fuel, and the rate of combustion; while the height of the chimney is influenced by the level of its base above the sea, the extreme range of external temperature, and the velocity of draught required. To a very large extent these matters are interdependent, and various empirical equations have been devised to connect the several data in a convenient form. One of the simplest and handiest, based on the fire-grate area, is:—

$$\text{Minimum sectional area of chimney in square ft.} = 1{\cdot}2 \text{ to } 1{\cdot}5 \frac{\text{Grate area in square ft.}}{\sqrt{\text{Height of chimney in ft.}}}$$

Other formulæ are connected with the coal consumption, the quantity of water evaporated, and the volume of air essential to combustion. Any one of these data may be employed in connexion with the foregoing equation, by means of a suitable commutation of the coefficient, the value for which, however, admits of considerable variation, so that it is impossible to do more than indicate it in very general terms. Thus, 1 sq. ft. of grate area may be taken on an average to consume from 15 lb. to 20 lb. of coal per hour, and 1 lb. of coal, according to quality, will evaporate from 10 lb. to 12 lb. of water, from and at 212° Fahr., and will require from 22 lb. to 24 lb. of air for its combustion with natural draught. Another factor, termed the boiler horse-power, has been introduced, but its use is scarcely legitimate, depending as it does on so many features connected with the engine alone.

Local regulations not infrequently prescribe the height to be adopted, and chimneys emitting gases which have been evolved in chemical processes should be at least 250 ft. high. The loftiest chimney in the British Isles is probably that at Townsend's Chemical Works, Glasgow, built in 1857-59. It is 454 ft. high from ground to coping, and is closely followed by the St. Rollox chimney of the same town, which is 435 ft. high. Chimneys over 400 ft. in height, however, are rare, and the majority do not exceed 300 ft.

The third problem is scarcely determinable apart from the specific conditions of each site. The intensity of pressure on any ground save rock should never be allowed to exceed 3 tons per square foot, and in many instances it will be desirable to keep considerably within that limit. In any case a substantial bed of concrete should be interposed between the chimney structure and an earth foundation. A thickness of 3 ft. should be regarded as a minimum for chimneys of 100 ft. in height, and from 5 ft. to 8 ft. is no uncommon dimension in the case of ordinary chimneys below 200 ft. in height. Of course, much depends upon the level at which a reliable natural foundation is encountered; and when this is at a considerable depth pockets may economically be introduced into the concrete work, as shown in Fig. 1. Sometimes a trustworthy stratum cannot be attained within reasonable limits, and then recourse has to be had to piling. A chimney 262 ft. high, built at Paris in 1900, and weighing not less than 5,660 tons, derives support ultimately from 140 oak piles, 12 in. square and 23 ft. long, driven down to compact gravel.

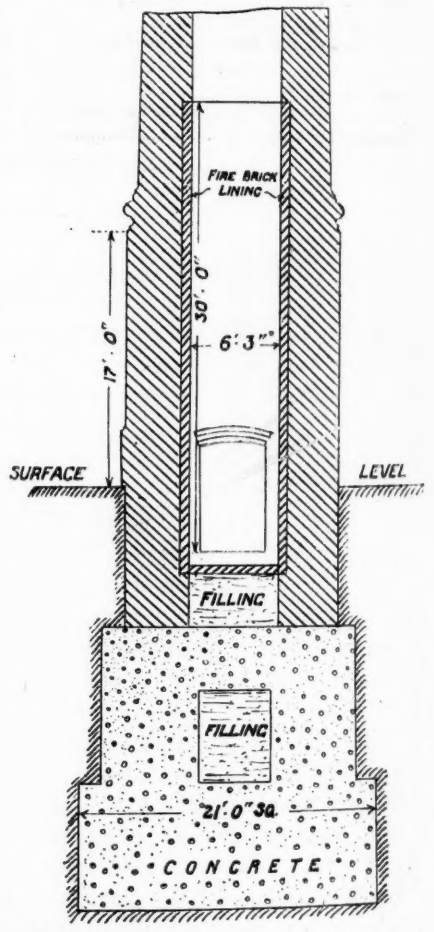


Fig. 1. Chimney Base and Foundation in Made Ground.

(Height of Chimney 120 ft. above surface level.)

While the concrete bed will have a considerably augmented area as compared with the chimney base, it should in no case be allowed to extend to a distance exceeding $\frac{d}{\sqrt{w}}$ ft. (d being the depth of the concrete in feet, and w the intensity of pressure at its underside in tons) beyond the face line of the lowermost brickwork, otherwise it will be liable to fracture. If the amount of projection be fixed by any special considerations, the depth of the concrete must be determined accordingly. The

"spread" of footings should be at least equal to the thickness of the wall at its base.

The pressure on the bottom course of brickwork is no less important than that on the concrete bed. Ordinary brickwork in cement will fail at a pressure of 30 tons per square foot, and in lias lime mortar, thoroughly set, at a pressure of 25 tons. One-fourth of these pressures should be looked upon as the maxima consistent with safety. Despite its greater strength, Portland cement mortar is not altogether suitable for chimney work; it does not stand heat well, unless it be mixed with a very considerable quantity of salt, which materially reduces its strength. Another objection has been put forward that Portland cement mortar diminishes the elasticity of a chimney and prevents it from rocking in the wind. The objection is somewhat fantastic, and can hardly be commended for its common sense. A rigid chimney must undoubtedly be preferable to one which sways.

The stability of a chimney has lastly to be considered in reference to wind pressure. Various values have been assigned to this force. The Board of Trade has officially specified 56 lb. per square foot as a maximum for bridges in this country, but some authorities recommend the adoption of so high a figure as 75 lb. The latter of these is undoubtedly excessive, for the former even corresponds to a hurricane with a velocity of over 100 miles per hour. Possibly so intense a pressure may have been experienced momentarily on a very small area; but it is probable, if not certain, that distributed over the entire height of the structure the pressure will hardly attain anything like that intensity—within the British Isles, at all events. In all likelihood a uniform pressure of 50 lb. per square foot is the most that need be anticipated. In Germany inland chimneys are only supposed to be called upon to withstand a wind pressure of 25 lb. per square foot, while for those on the coast the limit is taken at 40 lb. In Austria 30 lb. is the general assumption, while the chimney at the Paris Exhibition, already referred to, was calculated to withstand a maximum of 55 lb. As a matter of fact, most existing chimneys in this country will be found quite capable of resisting a wind-pressure of 100 lb. per square foot, if necessary.

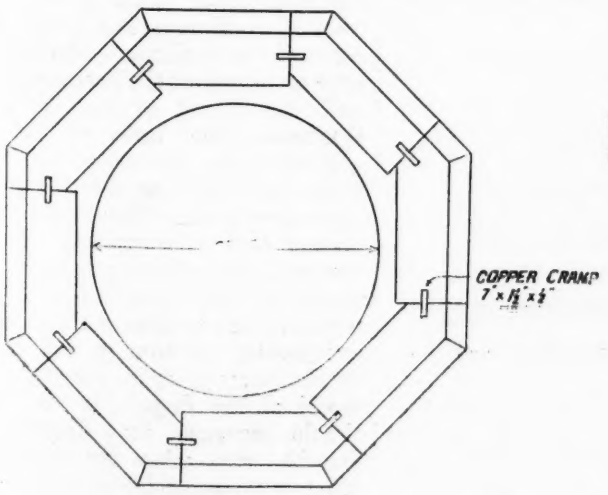
The square section offers the greatest surface opposition to wind. Taking it as unity, the values of other forms are as follows:—Hexagonal, ·85; octagonal, ·75; circular, ·5. On the Continent the circular coefficient is taken at ·66. This form, then, is evidently the most effective, but in chimneys of small diameter the curvature of the circle is unsuitable for ordinary brickwork, as the special material required is expensive. Hence the octagonal shape is often adopted.

Having determined the horizontal wind force and the vertical force of gravity due to the intrinsic weight of the structure, the stability of a chimney depends upon the position in which the line of action of the resultant, compounded of these forces, passes through the base or any bed-joint. According to Rankine's investigation, the limiting position of the centre of resistance must be such that the ratio of its deviation from the centre to the external diameter of the chimney at that level does not exceed $\frac{1}{4}$ for round chimneys and $\frac{1}{3}$ for square chimneys. The intensity of pressure will, of course, vary with the position of its centre of application, and may attain a maximum at the leeward side of double the mean intensity.

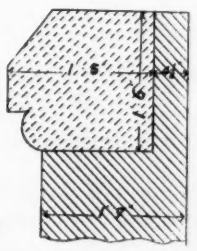
The height of a chimney naturally regulates the thickness of its sides, but the minimum thickness at the top is primarily determined by the internal diameter at that point. For chimneys with an internal diameter at the summit of less than 4 ft., 9-in. work may suffice, but 14-in. work is more desirable, and should be adopted, at all events, for chimneys the diameters of which exceed 4 ft. The top of a chimney has not only to encounter a very intense heat, but it is also in a most exposed position, and consequently is frequently the first portion to show signs of wear. The London Building Regulations, however, do not demand a greater thickness than $8\frac{1}{2}$ in. for the first 20 ft. downwards, with a regular increase of half a brick for every additional 20 ft. Other authorities specify an increase of half a brick for every 25 ft. In any case, the bottom thickness should conform to the serviceable empirical formula:—

·18 × height + thickness at top;

and the external diameter at the foot of the shaft should be not less than $\frac{1}{14}$ height—generally, $\frac{1}{12}$ height for circular, $\frac{1}{11}$ height for octagonal, and $\frac{1}{10}$ height for square bases.



Plan of Chimney Cap.



Section of Chimney Cap.

Fig. 2. Chimney 120 ft. high.

As regards decoration, a very ornamental cap to a chimney is a mistake. In lofty chimneys the details cannot be perceived from below, and there is every probability of disfigurement from sooty deposits. A few bold mouldings in stone or terra-cotta constitute all that is essential to give an effective finish. Cornice stones should not project beyond the face line of the main work so far as to bring their centres of gravity on or near the outer edge, and they should be securely cramped in position (Figs. 2 and 3), preferably with cramps of gun-metal or copper. Sometimes a cast-iron cap is provided, in several pieces, bolted together and lined with firebrick, as shown in Fig. 4. The object is to avoid the blackening of the terra-cotta mouldings below; any sooty deposits on the metal itself cannot be observed.

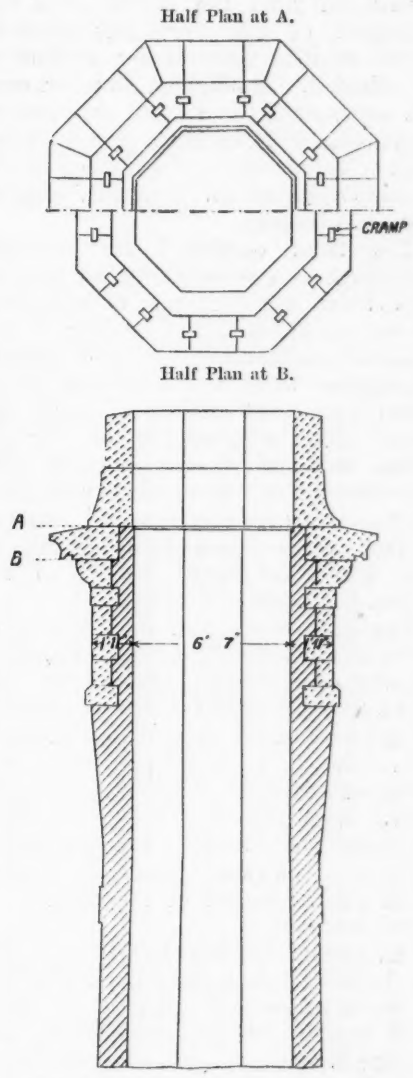


Fig. 3. Cap of Chimney 160 ft. high.

The exterior surfaces of chimney shafts are often intersected, at intervals, by horizontal bands or string-courses; these may be contrived so as to produce a pleasing effect. Projecting string-courses are not essential or altogether desirable; a contrast in the colour of the brickwork will suffice for the purpose. The quoins of angular chimneys may likewise be picked out in this way. A pedestal is another feature of common occurrence. It has a height of some 20 ft. on an average, and is generally square in plan, even in the cases of octagonal and circular chimneys. (Fig. 5.)

In the interior, chimney shafts will advisedly be lined with fire-bricks set

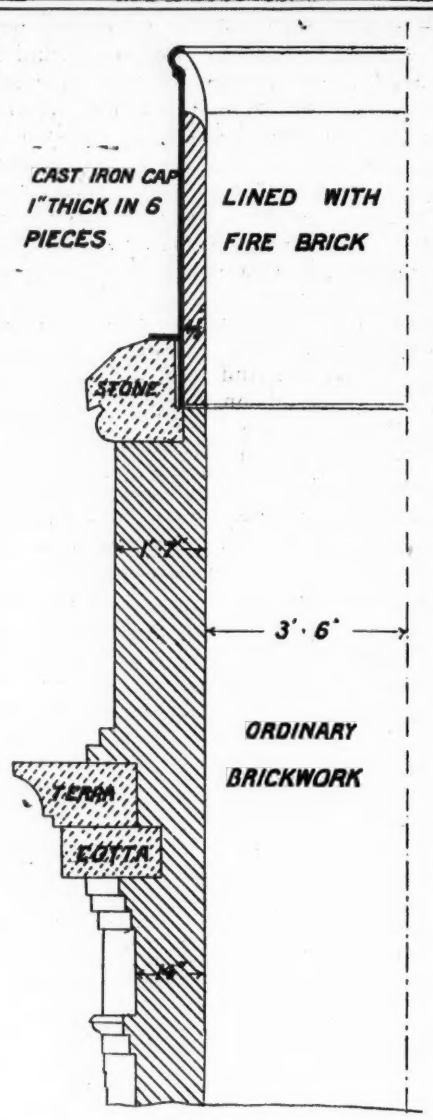
in fireclay, at any rate to a height of 30 ft. from the floor of the flue. This lining should be entirely independent of the main structure, being separated from it by a cavity 2 in. or 3 in. in width, which is sometimes put in free communication with the outer air; but this tends to reduce the internal temperature of the chimney, and is therefore open to objection. The top of the cavity should be protected by oversailing courses, so as to prevent the deposition of soot within it. (Fig. 5.)

The erection of a chimney is generally carried on from the inside, with the exception of the lowermost portion, where obvious facilities for scaffolding are afforded. Scaffolding, however, cannot economically be carried to a greater height than 50 ft. or 60 ft. Put-log holes are not permissible; all stiffening of the standards should be effected by angular and cross bracing.

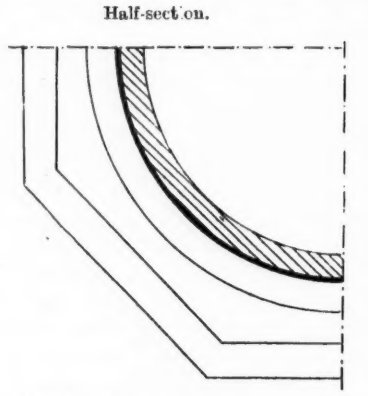
The bond employed for chimney brickwork is generally English garden-wall bond—three courses of stretchers to one of headers, the binding of the shaft circumferentially being of greater importance than the transverse bond. Hoop iron, as an additional tie, though occasionally adopted, is of dubious value, and should only be used with cement mortar; in contact with lime mortar the iron corrodes and becomes useless. Stone flags make a more reliable tie. The walls should batter to the extent of at least 1 in. in 4 ft.

For obvious reasons, the building of tall chimneys should only be carried on in mild, open weather, and it is furthermore desirable that the rate of progress should be leisurely, in order that the work may have time to set properly before being subjected to a heavy superimposed load. A height of 3 ft. per diem is probably adequate. Communication with the furnace should not be established until the brickwork of the chimney is quite matured.

An arched opening, temporarily built up, is desirable at some point of the base in order to provide access for cleaning and repairs. A copper lightning conductor is the only remaining feature of chimney equipment which calls for mention. Provided with a head of spherical form, having a number of projecting spikes, it passes down the shaft in a flat section, generally in two "tapes," and is carried well into the ground to plate terminals which are surrounded by good conducting material, failing direct connexion with water.



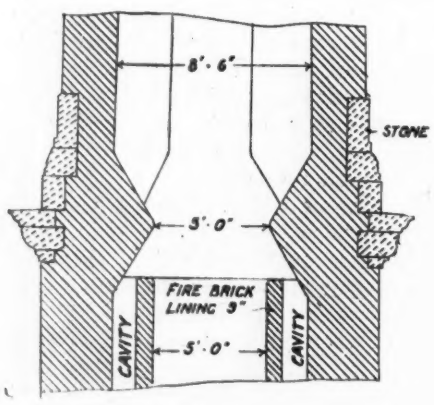
Half-section.



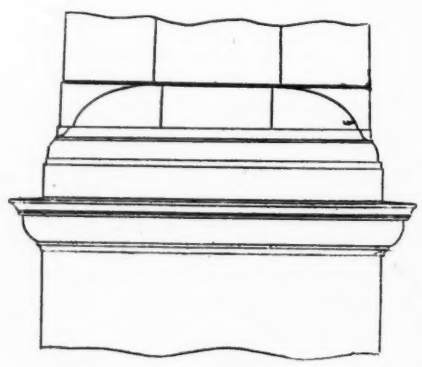
Quarter plan of cast-iron cap and lining.

Fig. 4. Chimney 150 ft. high.

The diagrams in illustration of this article have been selected from examples of chimney construction recently executed.



Section.



Elevation.

Fig. 5. Chimney Pedestal.

NOTES.

The Embankment Tramways.

THE chief idea suggested by the debate on Monday last, in the House of Commons, on the Bill of the London County Council to place a tramway on the Embankment to connect the northern and southern systems, is one of despair at the manner in which obstruction prevails in English legislation. No man of common sense or of public spirit doubts for a moment that the Embankment is very suited to a tramway, and that such tramway would be a boon to thousands of London workers. Yet the Bill is discussed, partly passed, then rejected session after session, though no one doubts for a moment that ultimately it will become law. On Monday the second reading was carried by the casting vote of the Speaker; now it will have to go through committee, a third reading, and the House of Lords, in all of which places opposition based primarily on opposing commercial interests or old-fashioned prejudice will do its best to wreck it. But, as we say, one of these days the scheme will be carried out and Londoners will wonder why it took years to procure it.

London Building Act.

THE Court of Appeal on March 21 decided a point under the London Building Act, 1894, in the case of Leadbitter *v.* The Mayor, etc., of the Borough of Marylebone. By section 90, subsection 1, the above Act requires notice to be given to an adjoining owner before exercising any rights in respect of a party wall, and, by subsection 4, the work must be commenced within six months of the service of the notice. Under section 90, subsection 7, if the adjoining owner, after the service of the above notice, does not within fourteen days express his consent, a difference arises between the parties, which, under section 91, must be referred to surveyors as arbitrators. The decision in the Court of Appeal is to the effect that if the surveyors have not made their award within the six months section 90, subsection 4, does not in such a case apply to render the notice of no avail.

Trades Union Disputes.

THE North Wales Quarries, Limited, was a company formed to work certain quarries in North Wales and there employ men discharged from the Penrhyn Quarries. Now, such is the irony of events, a dispute has arisen between some of the workmen—who were at one time employed at the Penrhyn Quarries—and the Board of the North Wales Quarries. The basis of the quarrel appears to be that these workmen have been discharged for refusing to sign an agreement under which they cannot, it is alleged, earn a living wage, and which prevents the reference of disputes as to wages to the Conciliation Board. It would be idle to discuss the merits of the controversy without a full knowledge of the agreement in question, but the moral of the dispute is that workmen should recognise that disputes are inevitable even when the ordinary capitalist is not in evidence, and that, so far as it is possible to judge, the ways of trades unionists who are acting as

employers are as harsh as those of the ordinary employer.

Victoria Falls Bridge.

ON Saturday last the two side cantilevers of the steel bridge over the gorge at the Victoria Falls were successfully linked up, thus virtually completing one of the most remarkable engineering works hitherto undertaken in the way of bridge-building. It is true that there is nothing new in the method of construction adopted, for other great bridges have been built out from the opposite sides of rivers until the steel work met and was joined up above mid-stream. But in this bridge the height of the platform above water level is far greater than in the case of any similar structure in the world, the clear headway under the bridge being more than 400 ft. In these days when tunnels are driven through mountains and under the beds of rivers and estuaries so that the headings, started at either end, meet within a few inches at the predetermined point, engineers are expected to bring together in perfect alignment the two parts of a bridge erected in open air. Still, the task is by no means an easy one, and can only be accomplished by the most rigorous attention to details in the builders' works and by untiring watchfulness on the part of the erecting staff and supervising engineers. In our note of November 12, 1904, we pointed out that the accompaniments of the Victoria Falls bridge threatened to result in serious disfigurement of a magnificent piece of scenery. We are glad to learn that arrangements have been made for devoting a large area of land in the vicinity of the falls to the purposes of a natural public park, and that future building operations will be restrained as far as possible. Temporary structures now required on the site will, of course, be removed when the bridge is finally complete, and if the railway company can prevent the erection of any further monstrosities in the way of timber and galvanised iron hotels they will render a great service to the artistic world.

Concrete-Steel Research.

A PRELIMINARY report has been made to the American Society of Civil Engineers by the special committee on "concrete and steel-concrete," to which we have already alluded. The first business was the recommendation of "a proper descriptive name for a combination of steel and concrete." After careful consideration, the committee unanimously arrived at what we consider to be the entirely inappropriate term of "reinforced concrete." The fact is that the two materials are so combined in practice as to constitute a new building material, which is most suitably designated as "concrete-steel." In reality it is neither reinforced concrete nor reinforced steel, and the employment of a qualification in this way clearly leads to misconception. Apart from this mistake the committee has done good work. Meetings have been held, at which representatives of various engineering and industrial associations were present, and sub-committees were appointed to draw up an outline of the work to be undertaken and to deal with the important subject of tests. Twelve technical colleges have promised active co-operation, and materials of uniform quality have been provided for the conduct of experiments. It is hoped that during the present year a sufficient number of tests will have been made to enable some rules to be drawn up for the guidance of designers, although the work of the committee can scarcely be completed in a single year. In the meantime British engineers are doing nothing in the way of investigation, and seem willing to take all knowledge of concrete-steel at second-hand from the more enterprising scientists of foreign countries.

Steam-Engine Research Committee.

SEVERAL years have elapsed since the appointment of the "Steam-Engine Research Committee" by the Institution of Mechanical Engineers, at the instance of the late Mr. Bryan Donkin. The first report has at last made its appearance in the form of a paper by Professor Capper, by whom the investigation has been conducted at King's College, London. Although covering only a small portion of the subject, the present report is a valuable instalment, and makes clear some points that were previously obscure. Leakage through the slide-valve has been quantitatively determined under definite conditions, and shown to be practically independent of sliding surface and proportional to difference of pressure between the two sides of the valve. Further, it is shown that even with carefully fitted valves the leakage may represent more than 20 per cent. of the steam entering the cylinder. If this happens in the case of a specially made experimental engine, the loss in actual work must be a most considerable source of wasted energy. Another point not previously demonstrated is that initial condensation in an unjacketed cylinder diminishes with increase of initial temperature, while the total condensation per stroke increases with initial temperature increase. Again, it seems that the re-evaporation for a given ratio of expansion is sometimes greater without jackets than with them, and that under certain conditions the use of jacketed cylinders may become unnecessary or wasteful. We hope that no time will be lost in preparing further reports, for steam-engine designers are much in want of reliable data of the kind which has so largely contributed to the rapid and efficient development of electrical machinery during the past few years.

Electric Units.

THE papers on electrical units, read before the International Electrical Congress at St. Louis, which have been discussed at the Institution of Electrical Engineers, show that many electricians are far from being satisfied with the present system of units. It was formerly the invariable custom to begin the study of electricity by considering the attractions and repulsions of pith balls charged by a stick of sealing-wax or a rod of ebonite. The unit of electric quantity thus obtained is known as the electrostatic unit, and the connexion between it and the unit in which a quantity of electric current is measured is not obvious. Maxwell proved theoretically —and it has since been proved practically by several experimenters—that the ratio of the two units is the velocity of light. Thus it is comparatively easy to change from one system of units to the other. To many electricians, however, this dual system of units is a stumbling-block, and so numerous attempts have been made to alter the fundamental definitions in such a way that one system of units would suffice. In the papers of Professors Ascoli and Giorgi a simple method of doing this is indicated, and the further suggestion is made that the ohm should be chosen as the fundamental unit in terms of which the others could be measured. We think, however, that their suggestions are premature. The very considerable advances that have recently been made in electrical theory, more particularly the identification of an electric current with moving charges of electricity, indicate that the mystery of the connexion between the units will probably be cleared up very shortly. It is, therefore, advisable to delay the recasting of the units until physicists have investigated more fully the properties of ions and electrons. The legal standards for verifying the volt, the ampère and the ohm, which are kept at the Board of Trade Laboratory, meet most practical requirements. We wish, however, that the Board of Trade unit, which is what electric companies profess to sell to their customers could be measured more accurately. An error equal to the half of one per cent. may occur in the most accurate possible measurement, and so the errors in everyday readings must be much greater.

Cotton in Electrical Machinery.

LIGHT is thrown by a recent report of the Engineering Standards Committee upon a point which has somewhat troubled makers and users of electrical machinery. It has often been found that the characteristic curves obtained from machinery installed after exposure to the weather, subsequent to manufacture, have been at variance with those given on test. Such differences have usually been attributed to defective instruments, but it now appears to be demonstrated that they are due to short circuiting through the water actually driven out from the cotton covering of the winding by the rise of temperature that commences when the machines are started. The correctness of this view is supported by the fact that in one of the experiments conducted at the National Physical Laboratory for the Engineering Standards Committee the observations were repeated after the lapse of some time, when an intermediate curve was obtained, showing that partial drying out of the coil had taken place. The tests are of special interest, as very little was known as to the possible leakage through cotton not thoroughly dried. The absorptive capacity of dry cotton for moisture may be realised by the fact that after exposure to the atmosphere for thirty minutes the gain in weight was found to be 0·68 per cent. and after fifteen hours 4·23 per cent.

John Stow: an Anniversary.

LAST Wednesday was the three hundredth anniversary of the death of John Stow, author of an annual "Summary of the

Chronicles of England," the "Annales," and a "Survey of London." The last-named work forms the basis of all the topographical descriptions of London that have been written since. He was buried in the Church of St. Andrew Undershaft, Leadenhall-street, where is the mural monument which his widow Elizabeth erected to his memory. The figure, apparently an authentic effigy, is seated, writing at a desk upon its knees, and was formerly coloured. It is often described as being of terra-cotta, but the material is veined alabaster; above the marble frieze are the arms of the Merchant Tailors' Company, of which hs was a freeman. Stow died in his eightieth year, having expended himself upon labours, pursued in poverty, contumely, and neglect, for which James I. rewarded him with a license to "gather, receive, and take the alms and charitable benevolence of all his loving subjects whatscever inhabiting his cities of London and Westminster and the suburbs thereof." Maitland records that Stow's remains were removed in 1732 to make room for another interment. Stow brought out the first edition of his "Survey of London" in a quarto volume of 483 pages, printed in black letter, in 1598—some copies bear the date "1599"; the second edition, enlarged to 579 pages quarto, appeared in 1603. To his Survey he added an appendix, being the account of London, then printed for the first time, written in Latin by William Fitzstephen, the monk of Canterbury and Thomas à Becket's chaplain. Stow's other works include editions of Chaucer's poems, of the "Flores Historiarum," and of Matthew Paris's and other chronicles. His collections for the Chronicles of England, bound in sixty volumes quarto, and preserved in the British Museum, testify to his amazing diligence and perseverance.

Hyde Abbey, Winchester.

A LOCAL committee is formed for promoting the proposed exploration of the site of Hyde Abbey, and the uncovering of the foundations which it is known still exist. The Abbey, dedicated to the Holy Trinity, St. Peter, and the Blessed Virgin, was formerly known as the New Minster by way of distinction from the Old Minster—the cathedral built by Kenwald in the VIIth century. It was founded by King Alfred the Great and his son Edward the Elder for a fraternity of regular canons under, as the first abbot, Alfred's chaplain St. Grimbald, whom he had invited to England from St. Omer. Bishop Ethelwold expelled the canons in favour of some Benedictine monks, who in 1109 removed from the immediate vicinity, on the north side, of the cathedral to new buildings erected in the Hyde meadow near the north wall of the city. They took with them the remains of Alfred, his consort Ealswitha, and their sons Ethelward and Edward the Elder, and of others their descendants. During the contest between Stephen and Mathilda the abbey was burned to the ground with fire-balls thrown from Wolvesey Castle. It was rebuilt, and with greater magnificence, *temp.* Henry II., and the abbot was summoned to Parliament. Soon after the Suppression, when the revenues amounted to 865*l.* 1s. 6d. per annum, the buildings were for the most part destroyed and in 1785 a gaol was erected upon the site. In digging for the foundations of the prison were discovered a large number of stone coffins, sculptured fragments, and miscellaneous objects, amongst them being a stone inscribed "Alfred Rex 881" in Saxon characters. The ruins had become a quarry for the repair of St. Bartholomew's Church and other buildings in the vicinity.

Mr. McLean's Gallery.

VISITORS to the spring exhibition at Mr. McLean's Gallery in the Haymarket have the opportunity of seeing at the top of the room Mr. Peter Graham's fine landscape, "A Spate in the Highlands," exhibited at the Royal Academy in 1873, and painted before the artist had become a mannerist. It is a fine powerful piece of painting, and bears renewed acquaintance very well. Among the other pictures in the gallery is a beautiful example of M. Harpignies—"An Autumn Evening"; Millais' three-quarter length of a young lady named "Clarissa," hardly one of his best works; Israels' "The Convalescent," which also we do not like very much, as it exhibits the sordid realism of poverty without the glamour of colour and treatment which this artist at his best manages to throw over such a scene; a little "Fête Champêtre" by Diaz, a kind of Watteau in a different manner; a fine though hard little painting of "Sheep in the Highlands" by Verboeckhoven, and a very lovely little sketch (it is hardly more) of a "French Pastoral," by Corot.

Messrs. Tooth's Gallery.

THERE are some fine things in Messrs. Tooth's Gallery—notably Henry Moore's grand sea-piece, "Perfect Weather for a Cruise." Then there is M. Harpignies' fine landscape "Château Gaillard," which we recognise also as an old friend; and an exceptionally good example of Diaz in one of those forest scenes in the painting of which he is almost without an equal. Israels' "A Fisherman's Family" illustrates (by contrast) what we remarked above as to the prosaic realism of the picture of "The Convalescent"; in "The Fisherman's Family" the poverty is as evident, but it is not thrust upon one in its bare realism; it is veiled by a fine artistic atmosphere. M. Bouguereau's "The Bather" shows the usual faultless correctness of this painter, but is as deficient as usual in feeling or point. Among other noticeable things are M. de Bock's "A Silent Pool," a picture rather seeming to be inspired by Diaz; a fine Still Life painting by M. Vollon; and two or three of Chevilliard's amusing satirical studies of the priesthood.

ARBITRATION CASE.—An arbitration has been held in Edinburgh in reference to the purchase of ground by the Edinburgh School Board. The arbitration was between Mr. William G. Mason, farmer, Amisfield Mains, Haddington, and the School Board of Edinburgh, for the purpose of ascertaining the price of ground at Gillespie-street, Edinburgh, to be acquired by the School Board as the site for a school. Mr. Mason claims 9,457*l.* Mr. William Ormiston, architect and surveyor, was sole arbiter. The witnesses examined for the claimant included Messrs. A. W. Macnaughton, architect; J. B. Bennett, surveyor; John Lownie, builder; William Thorburn, builder; Alexander Calder, builder, and others; and for the School Board, Mr. T. P. Marwick, architect, and others.

LETTER FROM PARIS.

THE Fine Art Committee of the Paris Municipal Council proposes to purchase the whole of the works left in the atelier of the late great sculptor, Dalou. This includes between 350 and 400 works or models in marble, bronze, terra-cotta, and plaster, many of which have never been illustrated or published in any form. Some of the slighter sketches show extraordinary force and rigour of conception, especially those for the "Monument aux Travailleurs" which the artist was working on at the time of his death. This collection, which forms a kind of summary of Dalou's artistic life, can be secured for the sum of 30,000 francs; and it is intended that it should find place in the Petit Palais, along with the works of Carriès. It is hoped in future to render the Petit Palais a kind of museum of the works of eminent sculptors, especially of their studies and sketches, which would have a great educational value for artists.

The first exhibition of the competition designs for "Maisons à Usage de Petits Logements Salubres et Economiques" is open this week in the Salle des Prevôts at the Hôtel de Ville. It does not seem to excite much interest, judging from the small attendance of visitors, nor has it up to the time of writing this been noticed in any of the Paris papers. There are 127 "projets," making up in all some eight or nine hundred drawings; the plans and elevations are in most cases to 1-16th in. scale. The elevations, except in two or three cases, are very uninteresting—the usual style of cheap-looking stone or brick six-story houses; and those with any pretention to design or originality would turn out too costly for the purpose. There is little that is new or original in any of the plans. In most cases four "logements" on each floor have access from a common staircase rising from the basement to the sixth floor. The accommodation consists generally of a kitchen and one large or two small bedrooms, with a water-closet near the entrance; one or two plans show a common working-room or atelier for several "logements." The arrangement of the general block plan appears to have been the chief object of attention with most of the competitors; and some of these plans are ingenious. The plot of ground chosen is a triangular piece with a surface area of 5,630 sq. mètres, bounded by the Rue du Prague, Rue Théophile Roussel, and Rue Charles Baudelaire. Among the designs which are most worth attention is that signed "Pour le Peuple," excellently arranged in regard to the general block plan and with a very attractive set of elevations; the planning and arrangement of the separate dwellings is, however, not so good. "Air et Lumière" is an excellent scheme taken as a whole. "Confort" shows a very practical scheme, and both the general arrangement of plan and the style of the elevations suggest the hand of an English "collaborateur." There are a few very ugly schemes of construction in *béton armé;* and one competitor, whose drawings are certainly influenced by a *béton armé* construction, proposes to erect his six-story buildings on pillars forming a covered way, "genre Rue de Rivoli," around the whole plot.

The Municipal Council have commissioned from M. Pierre Roche, a sculptor who has made a special study of this class of work, a decorative fountain including a statue of a young girl symbolical of Spring. It is to be executed in bronze, on a pedestal of stone decorated with gilded bronze and enamels. The work will probably be placed in the centre of the inner garden court of the Petit Palais.

The new Under-Secretary of State for Art, M. Dujardin-Beaumetz, presided a few days ago at the opening of the "Salon des Indépendants," whose eccentric productions, more numerous than ever, fill the two conservatories on the Cours la Reine. The 4,200 pictures include audacities in colour and drawing which at all events serve to amuse the visitors, but which, with the exception of a few works by good men, are out of the range of serious criticism.

A very different exhibition that of the new "Société des Peintres et Sculpteurs," is to be seen at the Georges Petit Gallery. Among the works exhibited is a remarkable portrait bust of Rodin by the late M. Guillaume. Among the pictures may be specially mentioned the "Nuit en Corrèze" by Mr. Thaulow, the curious works of M. Le Sidaner, the "Cathedral of Segovia" by M. Cottet, and the "Coucher de Soleil" by M. René Ménard.

M. Beaumetz has adopted a new regulation in regard to the valuable Gobelins tapestries which belong to the Garde Meuble Nationale, and which have been lent out over and over again for official *fêtes*, etc., to the great danger of serious injury to them. These valuable works are now to be classed among the "Monuments Historiques," with the result that they can no longer be removed from their place, and will be preserved and repaired when necessary at the expense of the Government.

There is talk of erecting in the Champs Elysées a monument in honour of the great modern French landscape-painters. This is also an idea of the new Under-Secretary for Art, who has applied to the Municipality to furnish a site and to be responsible for half the cost of the proposed monument. The best site would be the long stretch of lawn which extends parallel to the river between the Place de la Concorde and the Avenue d'Antin. The monument by M. Mercié to the memory of Armand Silvestre, the poet, is to be erected there; and a series of such monuments, disposed as in the Avenue de l'Observatoire, would have a fine effect without giving that appearance of a Necropolis which is suggested by the scattered monuments of the Parc Monceau. The difficulty will be to agree on the list of painters whose names are to be commemorated on the monument. About Diaz, Dupré, Daubigny, and Corot, for example, there will be no question; but would it be just to forget the landscape-painters of the last century, such as Joseph Vernet and others? Nor is it easy to fix who are to be considered as included among landscape-painters properly so called. There were some animal painters, such as Troyon, who were undoubtedly also great landscape-painters; and the sea-painters would have also a right to their share in the honours.

The "Vieux Paris" Committee has rendered a new service to art in obtaining the preservation of the ancient chapel of the Hôpital Laënnec, Rue de Sèvres, which the Department of L'Assistance Publique had condemned for demolition, under the pretext that it was falling to ruins. The Committee in question, however, have shown that the dilapidation of the building—more apparent than real—was the result of neglect, and as they have drawn up a statement of the necessary repairs which involves no very serious expenditure, it is probable that the authorities will undertake to keep up this building, interesting not only for its own sake but because it contains the tomb of the great financial minister Turgot.

At St. Cloud some necessary works have been undertaken, under the advice of M. Moyaux, Inspecteur-Général de l'Architecture, to consolidate the terrace on the river side of the palace, the clay foundation of which has shown signs of slipping towards the river. The work was carried out under the immediate direction of M. Leclerq. As it was impossible, from the nature of the ground, to underpin, the foundation walls of the terrace have been connected by ties to the ancient foundation walls of the château, and are thus prevented from slipping further.

At the Académie des Beaux-Arts M. Denys Puech has been elected, by 19 votes out of 34, to fill the place of the late Ernest Barrias.

The Académie have classed the principal competitors for the Prix de Rome in architecture in the following order of merit:—M. Bonnet, pupil of MM. Daumet and Esquié; M. Boussois, pupil of M. Pascal; M. Etrard, pupil of MM. Daumet and Esquié; M. Grisole, pupil of M. Redon.

ARCHITECTURAL ASSOCIATION CAMERA AND CYCLING CLUB.—The club have arranged an Easter excursion, starting from Paddington for Hereford at 6.10 p.m. on Thursday, April 20. Cyclists leave Hyde Park-corner at 5 p.m. Hereford will be the headquarters (City Arms Hotel), and the places to be visited from there include Leominster, Ludlow, Ledbury, Malvern, Worcester, Ross, Abbey Dore, etc.

THE LONDON GEOLOGICAL FIELD CLASS.—This class, conducted by Professor Seeley, F.R.S., begins its twentieth year's season on Saturday, April 29, with a visit to the North Downs at Betchworth. The field class, which is carried on continuously on the Saturday afternoons in May, June, and July, affords practical teaching in geology by studying direct from Nature the structure and modes of occurrence of the rocks in the basin of the Thames and adjacent country. Further particulars may be obtained from the Secretary, Mr. J. W. Jarvis, F.G.S., St. Mark's College, Chelsea, S.W.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary fortnightly meeting of the Royal Institute of British Architects was held on Monday evening at No. 19, Conduit-street, W., the President, Mr. J. Belcher, in the chair.

Deceased Members.

Mr. Graham, Hon. Secretary, said he had to announce the decease of Mr. F. S. Waller, who was elected in 1856 and was placed on the list of retired Fellows in 1900. Nearly everyone in the room would be acquainted with the name of Mr. Waller in connexion with Gloucester Cathedral. It was proposed to publish a short memoir, and he was sure they would all agree that a vote of sympathy be sent to the relatives of their deceased member. He had also to record the decease of Mr. S. J. Nicholl, Associate, Medallist of the Institute in 1845. Mr. Charles Hadfield, of Sheffield, had promised to write a memoir of their venerable colleague, and it would be most interesting to hear something of a man who practised architecture sixty years ago. He took it they would agree in a letter of sympathy being sent to the relatives.

The Planning of Cities and Public Spaces.

Papers on "The Planning of Cities and Public Spaces" were then read by Mr. John W. Simpson and Professor Beresford Pite.

Mr. John W. Simpson, after a reference to the literature on the subject and an expression of his indebtedness to the works of Herr Stübben, of Cologne, and Herr Camillo Sitte, of Vienna, remarked that the artistic side of city planning had been almost entirely neglected in England; our authorities, he supposed, did not even realise its existence. The laying out of new streets and roads is nowadays looked upon as purely technical engineering. It was not thus that the cities were created which are still the wonder and delight of the civilised world. The Greeks in the Acropolis, the Romans in the Forum, have given us a model for all time of the way to concentrate the forces at our disposal for the beautifying of a city. Contrast the effect of such spaces, enclosed by splendid edifices and adorned with countless masterpieces of plastic and architectural art, with the forlorn bronze figure stranded on its pedestal amid a tearing stream of traffic which represents the modern idea of a public monument. The "place" of mediæval and Renaissance times, the direct descendant of the antique Forum, has been entirely ignored in our modern city plans. Granted that modern conditions render the "place" no longer necessary as a common centre of exchange and commerce, yet we may do well to examine our fathers' work and save of the artistic heritage what may be adapted to our circumstances. Exhibiting on the screen plans of various ancient "places" in Italian, German, and Flemish cities, the author brought out that, despite their apparently aimless irregularity, they were in reality constructed upon definite principles. With a city we must husband our resources if we are to obtain an artistic whole. If we scatter indiscriminately the material which makes for beauty (and for our purpose this material is represented by the public buildings and monuments) it will be swallowed up in the general mass, and fail of its full effect. In the ancient "places" the statues, fountains, and other monuments were placed, not in the centre of the space, but at the sides. Fountains naturally should be placed beside the beaten trackway. As Donatello's statue of Gattemala and the little column stand at the side of the entrance to the church of St. Anthony of Padua, so the obelisks and statues of the Pharaohs rose beside the doors of the temples. The ancient churches in Italy were most often engaged on one or more sides with other buildings, and the author gave several illustrations to show how this tended to produce those groups of open places which give such charm to the buildings. The enclosing of the old public "place" was an important feature and a principal element of its charm. No mere open space between streets will give it—the appearance of an unbroken frame of buildings is essential. The author's illustrations made evident two leading principles. First, the monuments being placed at the sides, the centre of the square is left free, and the space is enclosed by a continuous frame of buildings. Next, the "place" must be proportionate in size and shape to the buildings to which it is to give value. Generally speaking, the space in front of a church or other vertical composition will be found to be *deep*, while that before a town hall or other building whose characteristic is length is usually *wide*. The irregular plan of ancient "places," though not in accordance with our modern ideas of "symmetry," do not distress us in execution—they appear natural. The builders did not trouble about theoretical symmetry, but they realised in practice what actually caught the eye. The author directed special attention to the Signoria at Florence—from an architectural point of view the most remarkable square in the world. Its form and size, the disposition of its monuments and buildings, the way in which the streets deliver into it, are all admirably studied. No effort is apparent, and the superb composition is admired without disturbing thoughts as to the causes of its beauty. Again, the plans of the Piazza di San Marco and the Piazzetta at Venice exemplify with the most refined art the principle deduced as to the placing of monuments, the freedom of the central space, the enclosed frame, the absence of geometrical regularity, and the value given to squares by their combination with others of varying form and size. Passing on to street planning, the author referred to the theoretical systems, rectangular, radiating, or triangular, as being one and all devoid of artistic interest; nor did such a consideration enter the minds of the engineers who designed them. They had failed even to solve satisfactorily the practical problem of constructing the shortest route between any two points so as to save time in transit. In ancient towns nearly all side streets entered main thoroughfares at right angles. In the modern triangulated and radiated schemes acute angles were inevitable. Again, the ancients avoided as far as they could the delivery of several arteries of traffic at the same point. This principle was now quite neglected. Considering that the chief object of modern street planning is to save *time* in getting from one point to another, and not merely to construct the geometrically shortest routes between them, the author turned to the streets of Bruges and the XIVth century in search of guiding principles, illustrating his points by the aid of diagrams. In the whole of Bruges there is hardly a street which formed an acute angle with another, nor a crossing of more than one street with one other. Where a street approached another obliquely, or threatened a complicated intersection, its line would be curved so as to avoid acute angles and confusion. Again, the principle of framing the view by enclosing it and preventing distracting perspective is carried out with as delicate an art in the plans of ancient streets as in those of open "places." The more limited the impression the more complete is its effect was the sound axiom of art which, consciously or by tradition, guided the old street builders. There is no reason, either practical or artistic, why our streets should have monotonous parallel sides. The author took as an example the characteristic little "Rue de St. Armand" at Bruges. Not only is such a varying line picturesque and advantageous to the buildings, but it affords exactly those spaces for the cab-stands, telephone, and fire-escape kiosks and other constantly increasing requirements which are difficult to provide for and cause obstructions in uniformly regular streets. Violent bends are not necessary; a slight curvature or displacement of the axis line will produce the happiest effects. The concave line of frontage is the most valuable in improving the appearance of a street, and it should be broken as little as need be. In conclusion the author asked, Is it hopeless to suppose that in time our authorities may perceive that mere pulling down, aligning, and widening of streets will never meet our traffic requirements, and that what is needed is artistic and considered planning? To the Institute students especially he commended this problem. Let them not be content to continue by mere tradition the measurement and study of the individual building and its details, important though these be. There lies a rich reward for those who will consider the combination, construction, and grouping by which effect is gained; and the Royal Institute of British Architects Prize Committee might perhaps judiciously stimulate synthetic as well as analytic investigations.

Professor Beresford Pite took for his subject the planning of the streets and public spaces of London. It must be manifest, he said, that counsels of perfection which originated and governed the planning of an architect's Utopia or of a garden city changed in value when the case was altered to the grim actuality of a modern city. Upon the superior commercial value of well-designed wide streets and grand

public spaces, compared with ill-arranged and ineffective ones, there could be no doubt. The recent development of municipal organisations would develop local interest in the larger aspects of street architecture and stimulate emulation between the boroughs. London was dotted over with picturesque elements which might be crystallised into characteristic and pleasing groups and arrangements. The author recalled typical centres of concentration of traffic and buildings which had each a character only definable by its local London name—*e.g.*, Tower-hill, with its history, its artistic charm and dignity, its large freedom of space and openness to the river; Smithfield, with its splendidly characteristic markets, its ancient priory and great hospital, and the mysteriousness of its subterranean roadway; King's Cross, with its railway termini and restlessness, and the ragged landscape of the Euston-road; Whitechapel, with its old haymarket width, the shambles, and picturesquely situated church; St. George's-circus, finely planned and occupying the natural centre of London, with the noble Bethlehem Hospital beautifully placed near by; the Elephant and Castle, Camberwell-green, Kennington-gate, and the site of the new Lambeth Town Hall at Brixton, were further examples to show that each district of London had opportunities for the conservation of the interest of public places and thoroughfares which were not far to seek for the exercise of local patriotism. The author pressed home to his audience the value of the latent and inherent qualities of London's local landscapes. Owing to the general lack of artificiality or of a formal arrangement of the many features of interest in London street architecture a character had been created which had artistic value, and, generally speaking, London was in no need of the services of a Baron Haussmann to straighten her out. A recognition of the peculiar elements of the city's landscapes would lead to that wise appreciation of liberty and of practicability which would not only save us from the personal annoyance of cherishing unattainable ideals, but would enable us to advise local authorities as to the conservation of those elements of interest and picturesqueness which were valuable. But the interest of London's planning and the laying-out of her public spaces was not only that of the smaller centres. Quoting Turner's remark that London without St. Paul's would not be London, the author attributed not a little of the Englishman's sense of the dignity and sufficiency of his citizenship to the situation of the Cathedral upon the outer sweep of the great river bend which revealed it to all who entered by the great waterway. In a very real sense the laying-out and planning of the city depended upon the sweep of the curves with which the river passed through London from the Palace of Greenwich to that of Fulham, and thus controlled the direction of the main thoroughfares on both banks from east to west. Englishmen were scarcely yet alive to the imperial grandeur of the Thames embankments, more worthy of admiration than any scheme of avenues or streets that the world at present held. Public buildings and national monuments could be more splendidly placed upon the banks of a broad river than on any other class of site, and London, without the enormous expense of forming new roadways and clearing thickly occupied areas for the purpose, was in possession upon the Thames of a series of situations for grand buildings which should awaken the public conscience to the existence of the delights architecture had the power to reveal. Speaking of the bridges of London the author said that the two distinct aspects of a bridge design were, first, that of its width, proportion, and gradient as a thoroughfare viewed from above; secondly, that of its elevation viewed from below. When the necessary new bridge at the Temple appeared, may it be as fine as Westminster from above and as beautiful as Waterloo from beneath! It would occupy a majestic site in the grand curve of the Embankment, so that its perspective would grow and radiate as it was approached, and with Somerset House between it and Waterloo Bridge, and the great Embankment below, a subject would be created not unworthy of some new English Piranesi. It was to be hoped that the fashion for bringing steam railways into cities would soon be over, and that invisible tubes would supply all the needs of rapid urban locomotion, while proper masonry bridges would replace the temporary and rusted-out toys of a past century for the accommodation of the now triumphant autocar across the Thames. It was too late to lament the presence of the Thames railway bridges; but how fine a series of the termini of the three great southern lines, such as those which lay on the north of Euston and Marylebone roads, would have been on the opposite bank, each approached by a fine passenger bridge from the city shore. What a saving of time in locomotion, the railway managers being saved the problems of bridge crossing. What a saving to the companies in the cost of city sites for the termini would not this reform have affected; and, above all, what an addition of architectural interest and beauty to the river in place of the marring the railways had effected! Referring to Regent-street, the author said that it was inevitable that the course of nearly a century should make inroads upon the completeness of any human scheme; and it was fruitless to deplore the necessary alterations which renewed the face of progressive cities periodically. Regent-street, however, had a special claim to be considered as a whole, for it was such. Its characteristic was harmonious completeness, with a sustained variety in its consistency which was doubtless the unexplained secret of its pleasantness. The whole street had been laid out and built with a regal sense of dignified discipline, and it remained the property of the Crown. It was, therefore, greatly to be regretted that latterly rebuilding had been permitted to take place, just as if the street had no harmony to be broken or special character of its own. Architects could not forget the charm of the portico of Hanover Chapel, one of the rare but perfect works of Professor Cockerell, which so happily and innocently projected over the footway, supported by graceful towers at the curved approach to Regent Circus. Nor could they but regard the reasons urged for its removal as being entirely insufficient, or find solace for their grief in the contrast to all its architectural virtues which now vauntingly occupied its site. On the eastern side of the street the harmony had been rudely disturbed as to architecture and scale by two modern intrusions which it was only necessary to characterise as extraordinary instances of the blindness of responsible authority to artistic facts. In view of the enormous labour and extent of the inception and accomplishment of the design of Regent-street, and of its value to London as a whole, it was not in sober truth too much to ask what reasons avail for not undertaking the modification and reconstruction of the recent monstrosities. Indeed, some complete design for preserving the proportions and character of the whole of this fine thoroughfare needs to be taken in hand in order that the inevitable effects of the now shortening tenures under the original leases in rebuilding may be met without reducing the street to such a wreck of its former self as has been achieved at Piccadilly-circus. The lower portion of Regent-street and Waterloo-place itself were in some danger of falling a prey to partial rebuildings without unity of treatment as to proportion. Londoners had expended some Philistinic wit upon the Crimea Memorial, but no one could deny the fineness of its monumental scale and the harmonious but quiet dignity of Waterloo-place itself. Was this also to be sacrificed? In the removal of St. Philip's Church, Regent-street had been deprived of another refined and interesting front which had been placed with full regard for the buildings opposite and the proportions of the adjoining blocks. What would follow on its site? Piccadilly-circus the author referred to as a painful example of how in decadent times the primeval disregard of order reasserted itself. The revelation of the latter art of the XIXth century comprised by the Pavilion and the vista of Shaftesbury-avenue, enshrining as a jewel in a swine's snout Mr. Gilbert's fountain, and by the comedy granite dome of the Strand Board of Works' convenience, presented altogether a contrast to the Quadrant, the County Fire Office, and the remains of the design of the Circus that cried aloud for remedy. This absurd accumulation of mistakes should be courageously handled and removed. The fear of traffic and the false economy in laying out Shaftesbury-avenue and the resulting sites had spoilt Piccadilly-circus and dismembered Regent-street, but there were capabilities in the ruins for renewing something of the completeness of scheme which had been lost, and of providing a fine public space there of which we need no longer be grievously ashamed. Whitehall and Parliament-square were decidedly growing in architectural interest and picturesque beauty. The placing of great formal buildings upon a wide thoroughfare having a slight general curve and some variation in width was producing in the former some charming effects; while the interest of the Abbey flank, the Houses of Parliament, and St. Margaret's Church, so valuable a foil to its neighbours, increased by contrast with the very different buildings at the northern side, and there was still a frontage waiting for some able designer to treat it worthily before the western side behind the Canning Statue. The placing of the finer classical buildings that London possessed upon informal and somewhat random surroundings was worthy of remark. St. Paul's would not gain by removal from the wonderful piling up of buildings and spires which grouped with it on its approach from Fleet-street through Ludgate-circus, and the Royal Exchange, without its pell-mell of omnibuses and the accidental appearance of the Mansion House or shy retirement of the Bank into the background would not be in London at all. The success and character of London street planning would appear to depend upon the provision of a fine building upon a site and in surroundings that were not architecturally ideal, the natural tendency to picturesqueness in a crowded city making amends by artistic accidents for the lack of rule and restriction required in the surroundings. At South Kensington a whole modern estate of great and costly buildings had recently sprung up on roads of magnificent width, without any such totality of effect as could without much difficulty have been obtained with the gardens on the north, Cromwell-road on the south, and Queen's and Prince's gates west and east. The buildings include the costly and wonderful Albert Memorial, the Albert Hall, Imperial Institute, Natural History and Victoria and Albert Museums—which are of the first magnitude—and the two Colleges of Science, the City and Guilds Institute, the College of Music, and others were of impressive size. The estate, however, had been futilely subdivided by two cross roads, practically accommodating only two buildings apiece, and the rest were left to the outskirts facing the surrounding stucco mansions. No earthly view of this fine accumulation of first-rate modern buildings was practicable. Turning eastwards to the Strand, one found a great problem courageously handled and originated, but waiting for its fate at the hands of the builders. Could a street of such a width as 100 ft. be fine if the sites and conditions were in character and scale with its breadth on one side of the street only? The difficulties would vanish if the providence of proportions from Regent-street were adopted here, and the scale would give value, not only to the two lovely churches and to Somerset House, but a healthy freedom for light and air in a central block of London atmosphere. The author concluded that the consideration of the subject before them led them naturally to look to the exercise of authority as necessary in all streets and public spaces laid out on formal and symmetrical principles, for the preservation of the character of the whole, and for the prevention of self-assertive individualism to the detriment of general amenity. Such authority could be most readily afforded by the County Council, probably acting through an architectural committee of advice, whose judgment could be allowed to decide upon the cases where the public interest demanded some regularity of treatment or otherwise. The widening of thoroughfares that had become main routes was expensive and difficult, but the Institute, he hoped, would throw no difficulty in the path of measures which must issue in the increase of public amenity and health, and would not allow the difficult questions of rights of property connected with frontage lines to narrow or limit its sympathy with the efforts of the London County Council to widen, open, and improve for all architectural purposes the streets that should be transformed into dignified thoroughfares. The proposals of the Draft Amendment Bill, now withdrawn, to increase the width of new streets, and, when expedient in the public interest, to widen streets up to 150 ft., were surely conceived with a regard for architectural effect that was of the greatest value, and which must command the support of every lover of London.

Mr. Freeman, K.C., in proposing a vote of thanks to the readers of the papers, said he could not help thinking that the tasks of the two gentlemen were unduly divided. Mr. Simpson

had an easy and delightful task—he went into the past and recalled names which in themselves called up the pleasant days they had spent in old cities. Professor Pite, however, had a more difficult task, and he had taken them on a personally conducted tour from Westbourne-grove, Oxford and Cambridge-terrace, to Whitechapel, Soho, and Poplar, and he (the speaker) congratulated him on the hopeful view he had taken in his last few sentences, and he began to think that after all they lived in a place which was not so bad as they were so often led to believe. He thought Professor Pite was wise in one thing. Mr. Simpson showed them some beautiful pictures, but Professor Pite abstained from doing that. Eloquence was a far more dazzling method on such occasions than the sheet, and he rather fancied that if views of some of the places referred to had been given Professor Pite's eloquence would have trembled on his lips. He did, however, entirely agree with one thing which Professor Pite said—and thought they did not make enough of it—and it was that London had an advantage which no other city in the world had in a comparative degree in the magnificence of the river which flowed through it. If he was showing a foreigner London he would take him on a steamer from Westminster Bridge and point out the buildings as they went along, and he believed the foreigner would be impressed. The papers seemed to him to deal with two questions. First, how were they to regulate individual buildings; and, secondly, how were they to regulate the streets. They were not the same thing at all. They might have a street of the most excellent proportion, but it might be entirely destroyed if something was put up which was incongruous with its surroundings. They would all sympathise with the observation as to the alterations taking place in the Quadrant, which was one of the most lamentable things which had taken place in modern times. But how were they to prevent it? It could be done only in one or two ways. Either all property would have to be State property, which even in these days was an Utopian idea, or they would have to have such building regulations as to compel people to keep their buildings to decent heights. They could not do more than that. They could not possibly prescribe what the design of all new buildings should be, and it would not be a desirable thing if they could do it. He supposed that nowadays the first thing which came upon anybody laying out streets was the desirability of getting rapid access, and that most detestable of modern institutions, the tramway, was largely responsible for that idea. Wherever there was a tramway there came the question of widening the street, and the taking off of corners, and making everything a perfectly straight line, which was one of the most depressing things in the world. Another matter which had been mentioned was the bridges, and in connexion with them, again, what were they to do? Who were responsible for allowing these bridges? Ultimately Parliament was responsible, because every railway company had to go before Parliament, and if nobody took the trouble to oppose the Bill it went through. When the Charing-cross railway bridge was once before Parliament he ventured, on behalf of the Metropolitan Board of Works, to suggest that the railway company should spend more money and make it a decent and ornamental structure. The Chairman of the Committee seemed puzzled with what he was talking about, and at last he said, "Are you asking us to go into an æsthetic question?" He said he was, and the Chairman replied, "We need not go further; let us go on to the next business." Well, that was not encouraging. He did not know how it was, but there seemed to be something in the railway mind which was incapable of understanding what a bridge should be. Sometime ago he was acting for a railway company, and they proposed to go through a park in which there was a beautiful drive to the owner's house. In an evil hour the people who were acting for the owner, and did not know a railway company, accepted a clause for the putting up of an ornamental bridge for which they were to approve the design. When the railway company submitted the design the unfortunate man nearly committed suicide, and the result was that he offered a substantial sum to the company not to put up an ornamental bridge, because it was twice as horrible as the ordinary bridge they would have put up. It occurred to him that there was one practical way in which they might consider this matter, and it was very important and interesting to know that exactly the same state of things they deplored here was equally taking place in every large Continental city one visited. If one went to Milan or Florence, or Venice or anywhere else, one saw the most perfect and beautiful examples of street architecture and street arrangement in the old town, and a fringe of buildings round that which was too dreadful for words. In Milan they found all round the old town barracks, where people were crowded into the flats, and there were perfectly straight streets. Take Florence again, and they would find within a few hundred yards of the most exquisite square ever erected that they had pulled down the old Fish Market and erected a thing worse than anything they had in London. One was led to ask why this epidemic of vulgarity and hideousness was going on all over the world at the present time, and he felt that it was largely due to this reason: If they went back and found out who governed the cities in the old day they would find it was the men of light and learning. The great architects and painters of the day were municipal men who gave the advantage of their knowledge to the city, and they found that in nine cases out of ten where there was a great church or building the men who did the work took an intimate and vital part in the government of the city. Perhaps the man was leader of the guild, or mayor, or was a member of the town council, and he gave the people the advantage of his assistance and great knowledge, and they listened to him. Nowadays, was it too much to say that anyone who had light and learning confined himself to outside criticism? They were people who were averse to meeting with the rough and tumble of municipal life, and the result was that the people who were placed upon local authorities had not, whether they wished it or not, the instruction and knowledge to enable them to carry those things out. He would suggest that all the learned bodies should pass a sort of self-denying ordinance that they should take it by rotation to cast lots as to who should be decimated, and that a certain number of them should go on to these local councils and use their influence, and by quiet talk try to bring these people into a better frame of mind.

Mr. Walter Crane, in seconding the motion, said, although he was not duly qualified as an architect, yet he was, as an artist, greatly interested in the planning of streets and the aspect which modern changes had given them. He came to Mr. Simpson's paper rather with the idea that they would be on sound principles by making their squares and public places take a definite if not a geometrical form, but he felt now a little shaken after the results shown to the contrary. It seemed to him that the character of the square must depend on the character of the town and the buildings. It struck him in regard to some of the plans that had been shown that possibly the original line taken by the street might have arisen from the primitive pathway. He would take an instance in his own neighbourhood, where the little high street until recently took an extremely picturesque line, and, although the buildings were of humble character, it was a pleasant street. Now, of course, modern ideas had broken in, and they had very spacious and modern buildings of terra-cotta and plate-glass, and the line of the street was also destroyed. That was the principle they had gone on throughout London. They had made the streets simply openings for traffic, and as traffic meant trade, and everyone, from the lowest to the highest, in this country thought trade was the one object in life, they saw the natural result. They cared only for traffic. They accepted the shortest way for their immediate purpose and let the future take care of itself. He rather envied Professor Pite's optimistic mood, but, at all events, he was on safe ground in carefully avoiding the suburbs. There was nothing more discreditable in their large towns than the suburbs, and yet the suburbs constituted much the biggest part of London. He often wondered what a foreigner thought coming into London, with the terrible squalor of the streets and the mean houses which met the eye. That had destroyed London, and it had destroyed Oxford and many continental cities in the same way. He believed it was Evelyn who recommended that in the extension of London they should preserve the original beauty of the town by starting to build no nearer than a circuit of ten miles, and it would have been a good thing if that had been done. It appeared that the whole aim of the present world was concentrated in moving fast, and it became a question of how long people would stop in a street, and, therefore, a straight street was obviously useful, for they did not remain in it long enough to see anything. As to South Kensington, he was rather impressed with the Imperial Institute on one side and the College of Science on the other, and from the modern point of view he understood it was the finest thing they had. It was regular, of course, but the architect on the one side had shown consideration for the other architect by repeating his features. The whole question of the expansion of London was serious, and old London was being so rapidly destroyed that one saw a new street almost every time one went out. He wondered that a great city like this had not a permanent committee sitting to consider the question. Mr. Freeman said a remedy was at hand; there was one artist on the County Council, and the only way was to get representatives on local bodies and fight it out. He felt that the tendency of the times was against architectural harmony, and that if they did get a success it would be by accident.

Capt. Hemphill (member of the Improvements Committee of the London County Council) said it might be of some use to that important gathering of architects if he explained the views with which the L.C.C. approached this subject. The two papers they had heard had been very instructive, and as a member of the L.C.C. he was delighted to come there and hear them; but he felt that they had rather a difficult task on the L.C.C., because they had to consider the public, and the public were not always struck with the feeling for art which dominated the gathering there. The public were rather inclined to call them to account with regard to the money they spent. In everything they had done so far they had not pretended to assume a knowledge of art, but they had endeavoured to get assistance and advice from those who were able to advise them, and perhaps it would be remembered with regard to the new street from Holborn to the Strand they had considered the question very carefully, and consulted many eminent architects on the subject. A remark had been made about the widening of the Strand; as a member of the Improvements Committee and other committees concerned he might say they all felt it was most desirable, but the difficulty was that it would cost 300,000*l.*, and they considered they were not justified in spending such a large sum of money as that. With regard to keeping the buildings low, of course it would be delightful to make all the new buildings there in accordance with Somerset House, and in agreement with the two churches, but they had to get back a very large sum of money. They had, however, determined that no new building should be built unless of suitable material, and of a design which should be approved of; and so far as regarded the buildings which had already been erected, the Gaiety Theatre and the New Gaiety Restaurant, the Council, acting under the advice of one of the most eminent architects in London, rejected two or three designs, and he did not think the buildings now, when completed, would be entirely unsuccessful. They sympathised also with the objection to terra-cotta, and had decided that, so far as they were concerned, they would, if they possibly could, stop anything but plain brick or stone. They might fail in this, but it would not be for want of desire to prevent it, for their object was to try and get buildings designed in an artistic way. He thought that Institute could afford the Council very valuable assistance, and the Council would welcome it very much. Sir Wm. Richmond had thrown out a suggestion in the Council for an Architectural Committee, but there were difficulties in the particular methods proposed by him. The Council would, however, he felt sure, heartily welcome all help in its search for knowledge. The members of the Council did not pretend to be entirely artistic or entirely scientific. In framing the London Building Act, a large portion of which had now been dropped for the present, they did not claim that they knew everything, and they went everywhere and asked for assistance and advice, and he felt the Council owed a debt of gratitude to that Institute for the valuable suggestions it offered, and which were carefully considered, and from which they derived great assistance. He hoped that when

they again asked their assistance, as they hoped to do at a very early date, they would receive their co-operation in the spirit in which they invited it. With regard to members of the Institute coming to the County Council, he could only say that if they could pass the ordeal of election, which was not altogether an unmixed joy, they who were now in the Council would be delighted to have their assistance, and he imagined that they could do no greater service to London than by coming on the Council. As to the pictures they had seen that night, he felt that there was a doubt as to whether the ancient streets would meet modern needs and requirements. While they must admire very much all this beautiful architecture which had been erected in the past, yet they had to realise that the conditions of the future were very different, and it was to the conditions of the future that the architects of London had to look to, and embody, if they could, those beautiful traditions which had been described so well that night.

Mr. H. V. Lanchester, in supporting the vote of thanks, said it struck one on hearing the papers how much more there was on the subject that had not been dealt with. For instance, Professor Pite touched on the subject of landscape, but he only just alluded to it and went away from it. Mr. Crane also alluded to the suburbs, and landscape and suburbs might be taken in conjunction with each other. In dealing with the extensions of their cities they hardly ever took into consideration the natural form of the hills and the landscape that they had to deal with. He thought it was the late Mr. George Gissing who referred to the suburban houses creeping like a disease over the country, and that always struck him as a very telling way of putting it. He differed from one of the speakers, who said that the Continental towns were doing as badly as in England with regard to the suburbs, for he thought on the Continent they did take care that the roads in some way should conform to the contours of the hills, and that the buildings should stand either against or on the hill. Another matter to consider was the gradation from the city to the country. A city might be absolutely formal and comparatively permanent, but when they got into the country they welcomed the decaying, picturesque effects that Nature produced. How were they to bring themselves from the rigid and permanent to the picturesqueness of nature? It was a big problem, and it would be a good subject for a paper dealing with the gradual and natural passage from the heart of a city to the absolutely natural beauties of the country. One thing he endorsed, which was that in the design of a building they ought to consider carefully the peculiarities of its position. He was afraid that too often they did not consider the exact view of a building in a town. They were pretty good at it in the country, but in a town they were too apt not to consider the various vistas before deciding on the actual design. As to the maintenance of the elevation or front of a building when it was an important factor in the design of a street, that had been dealt with in Paris, and he could not see why it could not be done here. Mr. Freeman had alluded to the necessity of getting men of light and learning on local councils, but he hardly thought that members of the artistic professions would be sufficiently popular with the general public to be elected. He thought, however, they ought to be co-opted on such bodies.

The Chairman said some very interesting points had been raised that evening, and he felt that the suggestion of a committee of artists, consisting of architects, painters, and sculptors, being formed to advise on alterations and proposals with regard to streets and buildings was a very important matter, and was a matter in which they might well follow the example of other countries. As Mr. Simpson pointed out, the Signoria was a place which took many centuries to form and many generations of great artists to do, while it would only take one engineer to destroy it in less than a week. Mr. Simpson had spoken of these open spaces appearing to be designed to suit the buildings already there, but might they not also infer that this was a tribute to the architect who had put up a building so suitable to the particular site? No doubt many of these places were originally market places, and they had many such places in this country. They had such market places in Norwich and Cambridge. Professor Pite had mentioned the many spaces that existed in the various boroughs of London, and in many of the despised suburbs these little spaces were found which could be beautified and opened up, and should be dealt with by the various municipal authorities. But it was important that the municipal authorities should have in their possession some papers or instructions as to the methods of laying out streets for their guidance. No doubt these boroughs would vie with each other and endeavour to make their particular borough superior to any around it. In that direction great improvements could no doubt be made by municipal bodies. As Mr. Lanchester pointed out, there must be some method of dealing with cities as they did with gardens. That was to say, if London was like a forest or wilderness of houses, there might be certain places near their official buildings which should be more formally treated like the formal garden near a house, but it would be a mistake to develop this in every direction. He thought that where formal gardens failed was in being developed to such an extent that the whole country was treated like a huge garden. It would be far better to keep the more formal methods near the house. So in a city their Government and State buildings and museums and other places should be treated with formal surroundings and with dignified approaches, and the outskirts might go off into the wilderness and be allowed to form groups of useful contrasts. Such cities as Bath, for instance, indicated what might be done by formal treatment in small parts, not too extended. Some reference had been made to Regent-street and Piccadilly-circus, and he would not be betraying any confidence if he said that the matter was under the consideration of the Crown officials, and it was very unlikely that any such mistakes and blunders as had already occurred in Regent-street would occur again. They were determined to see that there should be a proper design which should be adhered to, and that the beautiful lines of the Quadrant should be retained; thus any buildings which were put up would be on a recognised scheme and would be carried out under proper conditions. Piccadilly-circus was also under consideration, and there was the possibility of that being in due course satisfactorily developed when the opportunity arrived.

The vote of thanks was then carried unanimously.

Mr. Simpson said the remarks of Mr. Freeman and Mr. Crane had given ground for considerable thought. The proposal that the architects and artists should take seats on the County Council and other local authorities was a very gratifying one except for the artists and architects. He believed, however, that a number of their members did sit on local councils. That, however, he did not look upon as the proper solution of the difficulty. The trouble was that these schemes were conceived and promulgated by the authorities before the artists knew anything about them, and when the artist was asked to assist, the conditions were so rigidly laid down that his scope was very limited indeed. If public authorities would only remember that the first necessity for obtaining a good plan was to get a good architect, then their schemes would be very much more successful than they now are. He was struck by Mr. Crane's remarks about South Kensington. Mr. Crane appreciated the arrangement of the Imperial Institute, the Royal College of Science, and the Natural History Museum. Well, he (the speaker) did not. He had always thought that an opportunity had been missed there. If the Imperial Institute had been left where it was, and the Natural History Museum, instead of running parallel, had been placed at right angles on the west, and the College of Science at right-angles on the east side, what a magnificent place they would have had! As it was, the site had been treated like a suburban building site. He endorsed Professor Pite's remarks as to the excellent vantage ground the Thames Embankment gave for their statues and public buildings. It seemed that there was that one essential which the Forum in ancient cities gave for the public buildings and statues. Here they had a site to display their buildings.

Professor Pite said it had been remarked of the Royal Academy that they could always get a better exhibition by a process of further selection, and he believed that in London they could get more interesting and charming selections of buildings than in any other part of the country. They ought to get rid of the idea that because London was not Rome or Venice, therefore it had no interesting buildings. He thought the announcement of the Chairman as to Regent-street and Piccadilly-circus would give great satisfaction to the Institute. With regard to the Strand Improvement he was sure the County Council's efforts were appreciated, and in the Gaiety buildings they had to be thankful for the mercies they had received; but it was only because they had not refrained from persistently drawing attention to the matter. Let them continue to draw attention to it, lest the two churches be spoilt by the continuation of the Gaiety block. That block was all right in itself, but what of the churches when it was continued? As to the 300,000*l.*, he could not quite understand it, for the frontage remained the same, and he could not see how such an enormous sum could be lost. He felt that the exchequer officials were carrying too much weight with artistic members of the Council. Their suburbs were what they were simply because people coming to London only saw them from the railway, but with the dismissal of tramlines and the advent of motor-cars the suburbs would have a chance. If they went to Stoke Newington and Hackney Marshes they would find many things interesting, and there was a Stratford which those who only went through it by the Great Eastern Railway did not know. The Town Hall there, with the open space in front, was distinctly fine.

The meeting then terminated.

HOOPED CONCRETE.

WE have already drawn attention to the remarkable properties of concrete reinforced by a spiral winding of steel,* which has the effect of increasing the compressive strength of the concrete surrounded by the spirals to an astonishing extent. M. Considère, who undertook the experimental investigations that demonstrated the advantages of winding or "hooping" concrete in this manner, has patented the method for application to compression members and to portions of beams that are subject to compressive stress. The system has been adopted at various works in France, and arrangements are now being made for its introduction into Great Britain by the Armoured Construction Company, of Westminster. It is claimed that by the employment of hooping the safe load on concrete in compression may be increased from 500 lb. per sq. in. to as much as 2,000 lb. per sq. in. As some of the tests made by M. Considère upon hooped concrete columns, moulded twelve months beforehand, showed the crushing strength to be more than 13,400 lb. per sq. in., the safe load of 2,000 lb. per sq. in. does not seem to be exaggerated. Further, it is claimed that the quantity of steel required for a given duty is far less when applied as a spiral winding than when the metal is used as longitudinal reinforcement in the ordinary manner, and that the manufacture of hooped concrete members can be conducted very economically, as skilled labour is not necessary.

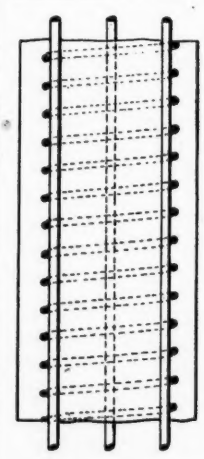


Fig. 1.

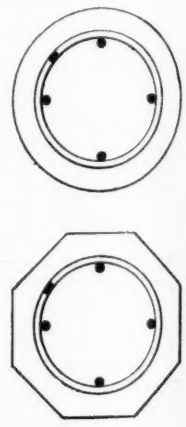
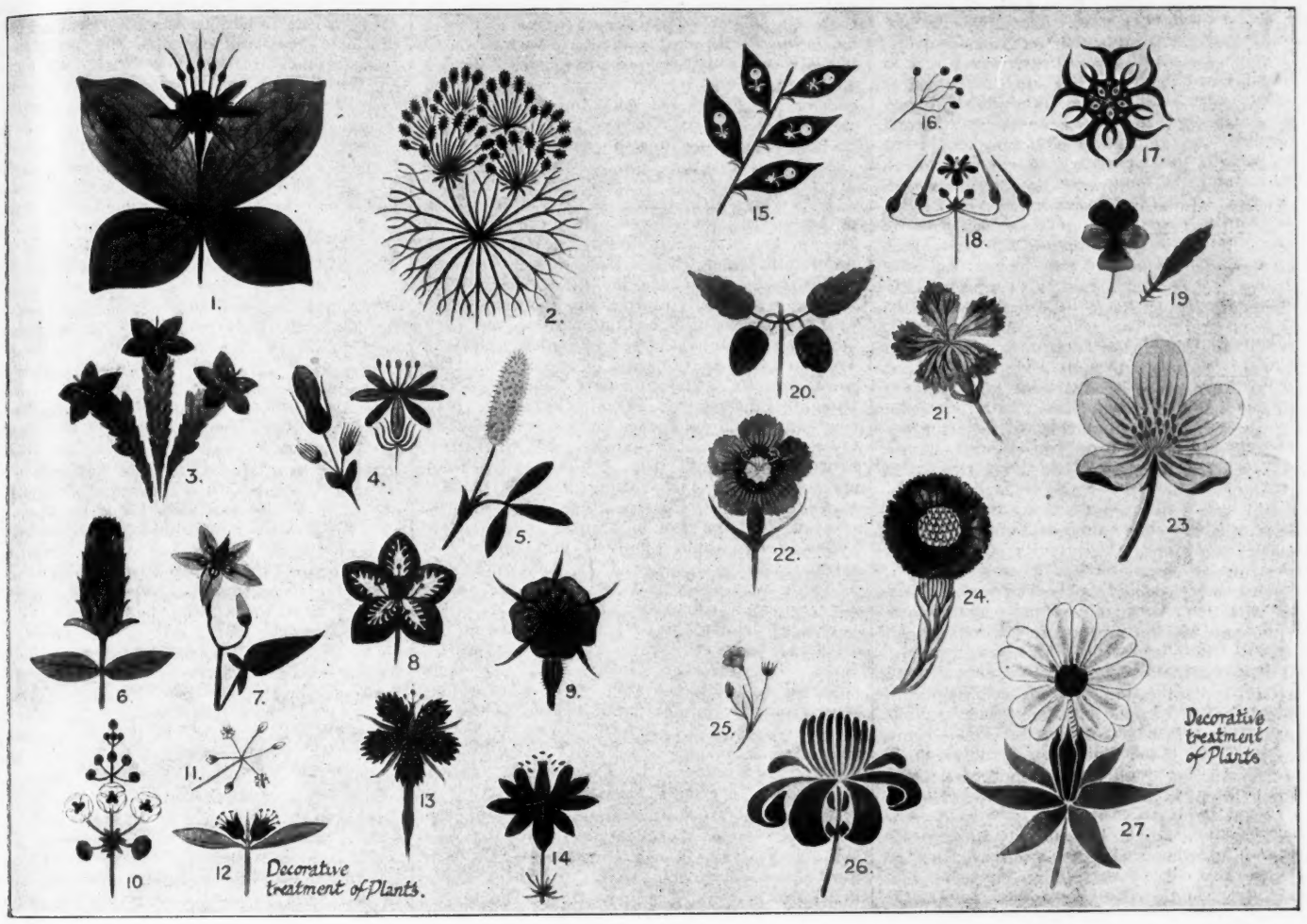


Fig. 2.

Fig. 1 is a vertical section of a Considère column, and Fig. 2 includes two cross-sections, one circular and the other octagonal. Although some longitudinal reinforcement is necessary for resisting flexure, it will be seen from the drawings that the rods are comparatively thin, and

* The *Builder*, vol. lxxxv., pp. 584, 612, 669.



Plant-forms for Use in Decoration.

REFERENCES.

1. Herb-paris.
2. Wild carrot (seeds).
3. Wall pepper.
4. Yellow wort.
5. Hare's-foot trefoil.
6. Ploughman's spikenard.
7. Bitter-sweet.
8. Grass of Parnassus.
9. Corn-cockle.
10. Arrowhead.
11. Chickweed.
12. Sea milkwort.
13. Maiden-pink.
14. Sandwort spurrey.
15. Butcher's broom.
16. Quake grass.
17. Ragged Robin.
18. Stork's-bill.
19. Wild pansy.
20. Wild hops.
21. Two-coloured pink.
22. Alpine pink.
23. Wild apple.
24. Colt's-foot.
25. Flax.
26. Traveller's joy.
27. White campion.

represent only a small percentage of the entire cross-section. Hooped concrete piles have been found extremely serviceable, as they are able to resist the impact of a very heavy monkey at high drop without developing cracks, even when no special cap is employed for protecting the top. In applying hooped concrete to beam design the compression flange has a cross-section, similar to that of an octagonal column (see Fig. 2), but with the addition of concrete at the two upper corners, so as to give a flat surface at the top. The web is about the thickness of the lower horizontal surface of the column, and the bottom flange of the beam is of concrete, reinforced in the ordinary manner.

M. Considère has lately constructed trestle girder bridges of hooped concrete, up to 300 ft. span, for light railways and high roads, the portions subject to tensile stress being built in concrete reinforced as usual, and the portions subject to compressive stress of hooped concrete. These bridges are said to be about 20 per cent. cheaper than steel structures, and in common with masonry bridges they require very little attention and maintenance.

SUGGESTED CEMENT FACTORY IN TRINIDAD.—A report has been prepared by the Government analyst and the Government geologist of Trinidad (Messrs. P. Carmody, F.I.C., F.C.S., and E. H. Cunningham Craig, F.G.S.) on the possibility of establishing a Portland cement factory in that colony. These gentlemen are of opinion that clay and limestone suitable for cement-making exist in the colony in sufficiently large quantities. They suggest that a cement factory, capable of producing not less than 200 tons a week and capable also of extension to meet further possible requirements, might advantageously be established at Pointe-à-Pierre.

PLANT-FORMS FOR DECORATIVE USE.

THESE are a collection of wild-flowers simplified or conventionalised sufficiently for the purpose of design.

They are collected and drawn by Mr. A. B. McDonald, some of whose designs for textiles have already been illustrated in the *Builder*.

For their use as suggestions in design Mr. McDonald observes that forms such as Nos. 4, 7, 9, 24, etc., are perhaps more useful for reference than Nos. 1, 2, 10, 18, as the latter are complete designs in themselves rather than representations of the flower.

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A MIDLAND Counties District meeting of the Association of Municipal and County Engineers was held at the University, Birmingham, on Saturday, April 1. The principal business of the meeting was a lecture by Mr. H. K. G. Bamber, F.C.S., on "Portland Cement," and the interest in the subject was shown by the large attendance of members and visitors. Mr. A. T. Davis, C.E., County Surveyor of Shropshire, President, occupied the chair, and among those present were Messrs. J. Price (Birmingham), J. T. Eayrs (Birmingham), A. D. Greatorex (West Bromwich), T. Caink (Worcester), N. H. Dawson (Banbury), J. P. Wakeford (Bilston), R. Mawson (Evesham), G. S. Horton (Felixstowe), J. L. Harpur (Brierley Hill), C. J. Fox Allin (Smethwick), A. J. Dickinson (Birmingham), E. B. Savage (Birmingham), H. Richardson (Handsworth), hon. district secretary, and others.

The President briefly introduced Mr. Bamber, who, he said, had on two previous occasions read papers at meetings of the Association. He was sure they would have a most interesting paper on this important subject.

Portland Cement.

Mr. H. K. G. Bamber, F.C.S., then delivered an interesting lecture on "Portland Cement," which was illustrated by a series of limelight and biograph pictures. The lecturer traced the course of recent development in the processes of the manufacture of Portland cement, and described the methods of manufacture from the raw material to the finished product. It was customary, he said, with a high class of Portland cement to grind to very great fineness as compared to comparatively recent practice, when a cement containing 15 per cent. residue on a 50-mesh sieve (2,500 meshes per sq. in.) was quite common, and considered fine ground. In ordinary practice of to-day the cement was ground so that the whole passed a 50-mesh sieve, leaving residue as follows: 50 (2,500 per sq. in.), trace per cent. residue; 76 (5,776 per sq. in.), 1 to 2 per cent. residue; 100 (10,000 per sq. in.), 3 to 5 per cent. residue; 180 (32,400 per sq. in.), 15 to 20 per cent. residue. The specific gravity test had superseded the "weight per bushel," and was a much more reliable test than the latter. It was not affected by the fineness of grinding, which destroyed entirely the value of the "weight per bushel" test. This test was applied as a measure of the calcination to which the cement had been subjected, as, should there be any considerable proportion of underburnt or lightly-combined clinker present in the cement, which would be likely to cause unsoundness, the specific gravity would fall below 3·125, which was taken approximately as the standard for well-burnt cement. The new standard specification provided for cement of various setting times, and described these as follows: There shall be three distinct gradations of setting time, which shall be designated as "quick," "medium," and "slow."

"Quick.—The setting time shall be not less than ten minutes, nor more than thirty minutes.

"Medium.—The setting time shall be not less than half an hour, nor more than two hours.

"Slow.—The setting time shall be not less than two hours, nor more than five hours."

With reference to the test of tensile strength it was important that the strain should be applied evenly, and at a uniform rate. The standard usually adopted provided for the application of the strain at the rate of 400 lb. per minute—very irregular results would be obtained if care was not taken in this particular. An average of results of five briquettes, both in the case of neat and sand tests, were usually sufficient for conclusions to be arrived at as to tensile strength. The test of soundness was, perhaps, more important than any other test to which cement was subjected. Portland cement used as a constructive material takes a long period of time to arrive at its maximum strength, and sometimes long intervals elapse after use before defects, if any, begin to show themselves. The tests for soundness consisted chiefly of exposing a set cement to various high temperatures in water, in order to hasten the ultimate results likely to be obtained under various climatic conditions. Many tests of a more or less stringent character had been introduced, the most severe being the boiling test. There were various methods of carrying out this test, but the most rational and severe was that known as the Le Chatelier method. The great success that attended the early efforts to construct with Portland cement concrete reinforced with iron or steel, had led in the last few years to great advances in this mode of construction. These structures combined lightness, graceful lines, and fire-resisting qualities, as had been demonstrated often in actual conflagrations, as in the great fire at Antwerp, where it was further shown that ½-in. to 1-in. concrete surrounding the steel bars was sufficient to prevent any ill effects. Ferro-concrete had been rightly described as a new material—as an example of which it might be mentioned that ferro-concrete beams showed under test ten times the elongation without showing any cracks or sign of disintegration that a similar beam of concrete only would give. Buildings constructed on this system showed great absence of vibration where high speed machinery was in use, owing to the monolithic nature of the structure, in which every part was solidly bonded to every other part, from foundations to roof, without a single joint bolted, riveted, or otherwise. This fact also made these buildings very sanitary, as no rodents or microbes could attack the material or find harbourage therein.

The lecture was very fully illustrated with a fine series of pictures showing the actual process of manufacture from the raw material to the finished cement ready for use.

M. De Vesian followed with an interesting series of pictures of examples of constructions in ferro-concrete. These included pictures of bridges at Rochdale, Liverpool, and Clitheroe; grain silos at Swansea; storage sheds on the Ship Canal at Manchester, and for the Great Western Railway at the Royal Albert Dock, London, and at Bristol; a chocolate factory in France; a macaroni factory in Italy; and a variety of other buildings, principally on the Continent.

The President proposed a vote of thanks to Mr. Bamber for his lecture, and to M. de Vesian for the illustrations of ferro-concrete work. He said when the pictures of the Associated Portland Cement Manufacturers' Works were shown on the screen he could not help his memory going back some fifteen years when he went through some cement works. Then he was very nearly choked with dust, and covered with the same material, but that evening they had seen all the processes of manufacture without any of those inconveniences. Curiously enough, on the previous Wednesday he was at Liverpool, and saw there the Burlington-street bridge, which M. De Vesian had shown on the screen. That bridge had been constructed under the supervision of the City Engineer of Liverpool, and when he visited it one half of the bridge was open to traffic, and carrying heavy vehicles, while the other half was still under construction. In ferro-concrete they had a combination of two very strong materials—steel and concrete, and he thought they were approaching a new era in construction work—the era of ferro-concrete.

The vote of thanks having been passed,

Mr. Bamber, in reply, said the illustrations of ferro-concrete work had been of great interest to himself. We were very conservative in these matters in England, and it was a pity we had allowed the foreigners to get so far ahead of us in this new form of construction. It was an economical material, and one which showed greater stability than the old forms of construction.

THE CITY OF LONDON DIRECTORY.

THE thirty-fifth annual edition of the City of London Directory has just been issued by Messrs. W. H. & L. Collingridge, 148 and 149, Aldersgate-street, E.C. It has been revised and brought up to date, and the present issue, besides containing information concerning the City Corporation, the Committees, the City Officials, and the Livery Companies, gives the London County Council Committees. The work contains the following sections:—The Official, Educational, Livery Companies (*i.e.*, the names and addresses of the Masters and Courts of Assistants, engravings of the Arms, historical accounts of the Companies, their ancient powers and present privileges, particulars of Fees and their Charities, etc.); streets (the positions of the fire hydrants, pillar letter-boxes, and public telephone call offices are shown); Biographical, and Public Companies. There is an alphabetical list giving the name, address, and trade or profession of every person or firm in the City and a trades guide, classified under the various trades or professions. The directory includes an excellent coloured map, and the price of the work, which is an admirable publication of its kind, is 12s. 6d.

THE BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE twenty-seventh annual dinner of the Builders' Clerks' Benevolent Institution was held on Tuesday in the King's Hall, Holborn Restaurant, W.C., Mr. James Carmichael, President, in the chair, supported by Messrs. G. Appleton, E. Brooks (Hon. Treasurer), H. Chatfeild Clarke, J. Clayton, J. Howard Colls, D. Duff, J. S. Gibson, G. R. Grant, F. Higgs (President London Master Builders' Association), J. C. Hill, Henry Holloway, J.P., C. Val Hunter, D. W. McInnes, C. H. Mabey, F. G. Minter, W. Phillips, A. Ritchie, J.P., C.C., W. Woodward, J. Austin (Secretary), and the following members of the Committee—Messrs. Amphlett, Clarke, Desch, Gammon, Hadland, Mackness, Newling, Oldham, Parker, Stansfeld, Tarring, and Thompson; the company numbering about 460.

The loyal toasts having been honoured,

Mr. J. C. Hill proposed the toast of "The Builders." There never was a time, he said, when better work was put up by the builders of London. We hear a good deal about the excellence of old work, but if we pull down old buildings we find that there is very little work in them, from foundations to roof, which would compare with the work done by the London builder of to-day. The building trade was a very honourable one, but it was a business the responsibility of which was very great. There were difficulties of foundations, light and air, and the difficulties of carrying out buildings to the designs that were given him, as well as the difficulties of labour; and last, but not least, the difficulty of making the job pay.

Mr. F. Higgs, who responded, said that Mr. Hill had referred to Cain as the builder of the first city, but he (the speaker) did not think that Cain had to deal with the difficulties which the British working-man gave rise to to-day. There was a tendency on the part of the British workman to wheel a barrow, for instance, as nearly empty as possible. There were all sorts of difficulties which Cain had not to contend with. He expected that Cain was his own architect. Certainly he was his own clerk of works. All builders wished the Institution the greatest prosperity.

The President then gave the toast of the evening, "The Builders' Clerks' Benevolent Institution." They were there, he said, to further the best interests of the Builders' Clerks' Benevolent Institution. The ultimate success of the evening would depend not on the numbers present, but on the way in which they assisted that deserving Institution. On looking over last year's report, he saw that the Institution sought to relieve widows and orphans of builders' clerks, and also those who were described as decayed clerks. As to the widows and orphans, he was quite sure that those present were much too gallant to make it necessary for him to adduce any argument on behalf of the widows and orphans. It might be said that builders' clerks and others get married too early: that might be so in some particular case, but, speaking broadly, he did not agree. There was no finer discipline in youth than enforced economy and practical self-denial, and he who learnt this lesson early in life had not only learnt a good moral lesson, but he had laid a sure foundation for a successful business career. The decayed clerk was a pathetic figure. In these days of rush and keen competition, there was scant consideration given to the decayed clerk, and when he lost his situation by causes over which he had no control he met with many rebuffs, and often found it hard to get another situation, the cry being for young men. He had a strong regard for builders' clerks, because he had been so well served by them. He could not help repeating what he said on a former occasion—*i.e.*, that what little success he had experienced in business had been to a large extent due to the fact that he had been able to employ in the office and out of it better men than himself. He hoped that none of his staff would ever be compelled to seek the aid of the Institution, but, if they did, he hoped that the Institution would be in a better condition than it is to-day. He regretted to say that there were half-a-dozen eligible candidates who could not be admitted owing to lack of funds, and he hoped those present would do their duty by helping their less fortunate brethren.

Mr. E. Brooks, Treasurer, in reply, said they wanted the builders' clerks to help the Institution more than they did. If builders' clerks generally helped them more, the Institution would not have six candidates who were eligible unable to get assistance for wants of fund.

Mr. Henry Holloway then proposed, "The Architects and Surveyors." As to the great advancement which had been made in London architecture, at any rate, during the last few years, he said he had had an illustration of that during a visit he recently paid to America. He found there a number of his fellow-countrymen who had gone there years ago, and they were very proud of their work, and in the matter of bulk they certainly, in many American cities, beat us. In talking to his fellow-countrymen in America, he found that they were judging London architecture from what they knew of it some thirty years ago, and he advised them to come and see it to-day. He had recently had one visit from an American builder, who admitted that immense improvements had taken place in London building since he left London twenty-five or thirty years ago. He had heard similar views expressed by men who had returned to the old country, and those who had been absent from London for a long time were better able to appreciate the change that has taken place and the improvement in our architecture than we who are living in London to-day. London architects were doing a great work in beautifying our beautiful old city.

Mr. H. Chatfeild Clarke, whose name was associated with the toast, replied, remarking that architects and surveyors greatly appreciated the work of builders' clerks. As to architects, he believed that they were doing their best in laying out large portions of the city and in designing the new buildings which were being erected in the new streets which were being made. They were doing their best to make buildings worthy of the greatest city of the world, and he believed that in sanitation, in construction, and in design they had made great advances in recent years. He thought it would be a great mistake for the idea to get about that architects were opposed to proper restrictions in building or to proper provisions for the protection of life from fire or otherwise. Architects were as deeply interested as any public body in the city in getting the best building and the best provision for escape in case of fire in the city for which they felt such a pride. It had only been recently, through having a certain Bill brought before Parliament, they felt that their client's rights had not been properly protected, that they and others had raised their voices, with the results which were well known. As to the fire clauses of the Building Act Amendment Bill, every architect would aid in promoting clauses for the protection of life from fire. An important question affecting architects had just been discussed in the Law Courts—*i.e.*, as to whom the drawings prepared by the architect belonged. That had always been a tender question. In view of the decision of the Court

of Appeal—and as it was the Court of Appeal one spoke with great respect—architects now had to give their drawings up to the building owner. He felt that that decision was not a logical decision, bearing in mind the work the architect did. The work of the architect was to produce a building, and the actual data with which he produced it did not belong to the client. They might as well say that the tailor who made the pattern for a coat must give up that pattern if called upon to do so. They did not want the pattern, but, if they did, it would not belong to them. He hoped that the matter would be further considered. Architects had been greatly aided recently by the House of Lords' decision which Mr. Colls had obtained in regard to the law of ancient light, and they owed a deep debt of gratitude to Mr. Colls. Before that decision it was practically impossible to raise three bricks upon another without someone objecting. Now we had a reasonable decision, and, if the course of procedure in light and air matters was slightly altered, as he believed it would be, and for which a Bill was now deposited in the House of Commons, he believed they would be able to work more pleasantly and without doing harm to their neighbours, and that, of course, was what they wanted to do.

The concluding toasts were:—"The President," ably proposed by Mr. A. Ritchie, J.P., C.C.; "The Past Presidents," proposed by Mr. J. S. Gibson and acknowledged by Mr. F. G. Minter; and "The Visitors and Merchants," proposed by Mr. H. W. Parker and responded to by Mr. A. Gibson.

During the evening, subscriptions to the amount of 745*l.* were announced, including 100 guineas from Mr. Carmichael and ten guineas each from the following—*i.e.*, the Institute of Builders, Mr. H. Chatfeild Clarke, Messrs. G. Trollope, and Colls & Sons, Messrs. Farquharson Bros. & Co., Messrs. Kirk & Randall, and Mr. W. Curling Anderson.

THE INCORPORATED INSTITUTE OF BRITISH DECORATORS.

THE annual dinner of this Institute was held on Monday, in the Oak Room, Trocadero Restaurant, Piccadilly Circus, W., Mr. J. D. Crace, President, in the chair. There were also present: Sir Robert Cranston, Lord Provost of Edinburgh; Mr. H. Vigurs Harris, President of the National Association of Master Painters of England and Wales; Mr. M. E. Dockrell, President of the National Association of Master Painters of Ireland; and Messrs. W. W. Bridges, W. Callingham, H. Chatfeild Clarke, J. Clark, M. Cowtan Cowtan, W. F. Dobie, F. G. Dear, H. Phillips Fletcher, T. W. Heath, J. Higson, J.P., F. de Jong, J. Sibthorpe, F. C. Simpson, E. G. Simpson, W. G. Sutherland, J. H. Turner, J. C. M. Vaughan, and F. W. Englefield, secretary, and others.

The loyal toasts having been honoured,

Mr. Sutherland proposed "The Institute of British Decorators." The Institute, he said, was the result of an effort made some six years ago, though as long as eleven years ago it was promulgated by the late Mr. Thomas Bonnar, of Edinburgh. Mr. Bonnar was a man who had large ideas and broad views of the possibilities of the decorators' trade and the claims which it had upon the members of the craft and the public, and it was the outcome of the views Mr. Bonnar put before a meeting in Manchester in 1894 that some five years later the Institute was founded. If they had not realised all that they set out to accomplish, they had not given up the hope of doing so, and they had been very fortunate in having as their guide, philsopher, and friend their President, Mr. Crace. They had never called upon the large resources of energy and experience which Mr. Crace possessed without getting a full and hearty response. He thought they should, as an Institute, take some step forward in the way of aggressive action, for in the last twelve months they had been rather quiet. In former years, both in the northern section and the central section they had had a series of lectures which were beneficial to the calling which they represented, but last year this had not been continued except in Scotland and Ireland. In the central and northern districts they should develop the scheme of lectures, and he was able to say that the matter had been before the northern district, and no doubt it would come before the council in a short time. The aims of the Institute were not quite the same as those of the National Association. In the Association they dealt with those practical matters affecting the painters' craft, but the Institute was started to direct the decorative trades in the highest channels, and to represent those who were engaged in the decorative art side of the craft. In that they had succeeded to some extent, and the trade valued the Institute, even although it had not accomplished all it might hope to do. They were gaining experience year by year, and they hoped to make some mark on contemporary life and work.

The President, in response, said it was true that the Institute, in its very short life, had not accomplished all that Mr. Bonnar hoped for it, but he did not think that Mr. Bonnar limited his hopes of the realisation of his ideas to five or six years. It was rather a pathetic circumstance that Mr. Bonnar's life ended within two days of the Incorporation of the Institute, but they would always remember that they were indebted to him for the initiation of the idea and the general motive with which he started. As Mr. Sutherland explained, the National Association and the Institute had objects which were partly the same but which diverge a little. The National Association was really founded with the idea of promoting all that tends to the benefit and the regulation of the trade itself, while the Institute aims at those matters which were rather outside what one would call trade interests, and were connected with the art and the methods of practice and the questions which did not directly relate to the profits of a business concern. The higher they could fix their aims and make their practice the better would the standard of all the members be.

Mr. Crace then proposed the toast of "The National Association of Master Painters of England and Wales, the National Association for Scotland, and the National Association for Ireland." He said that these Associations had done much to bring together and promote the best interests of the craft, and had assisted the younger generation—the men who were to succeed them—and he was glad of the opportunity of saying how much those efforts were appreciated in the Institute. Mr. Sutherland had not made any allusion to the large part which he had had in starting both the Association and the Institute, but the members knew, and did not forget. He regretted that the President of the National Association for Scotland had been prevented at the last moment from coming to London for the occasion, but that Association was well represented. It said a good deal for the vitality of the Institute that these gentlemen came so far in order to keep in touch with them.

Mr. H. Vigurs Harris, President of the National Association of Painters of England and Wales, in reply, said he had found in going among the various Associations a growing and deepening sense of responsibility and a vitality which was extremely encouraging to anyone who occupied the Presidential chair for a year. They should take a serious view of their trade, and the more they did and the more they thought of the interests which were laid upon them as masters, the more cheerful and agreeable would their calling be. It was when they had a contempt for their daily occupation that life became cheerless and a dull monotony; but he had seen no signs of that contempt on the part of the members of the Associations. Everywhere there was a feeling of hope, and he doubted whether there was a trade or profession anywhere at the present time which had so much hopefulness in its ranks. If they did not take themselves seriously, they could not expect their clients or the public to do so, and if in trade affairs—and professional matters, for their business bordered on that of a profession—they had no ideals, and did not try to elevate their own taste and educate their employees, and if they did not beget in the various workshops a pride in the calling, it would be small wonder if the public had a contempt for them and their work. The speaker, having referred to the great indebtedness of the calling to Mr. Crace, said that a master house painter did not justify his existence by making a profit out of his business; he justified himself when he carried on his business as artistically and soundly and thoroughly as he could. The National Association had devoted itself to the purpose of raising not only the ideal, but to make the realisation of the ideal more possible within the ranks of house painters throughout the country, and they had devoted themselves to the idea that the next generation of craftsmen would be greatly superior to those of the present day, and considerable attention was consequently being given to the education of the boy.

Mr. W. F. Dobie, in responding for the Scotch Association, said it had exactly the same ideals as the English ones. One endeavour of the Scotch Association was to elevate the business of the house painter, etc., in every way they could. An important matter came up for consideration at the Edinburgh meeting, when a paper was read on the subject of adulteration of materials, and that matter had been exercising the thoughts of many of them, and was one which required the very earnest attention of all the Associations. It was a question which might even be taken up with advantage by the Institute itself, for there was serious adulteration of nearly every colour material they used.

Mr. Dockrell suitably responded for the Irish Association.

Mr. Crace, the President, then proposed the health of Mr. John Sibthorpe, one of the Vice-Presidents of the Institute and a member of the Irish District Committee, and those associated with him in the organisation and carrying out of a trip to Italy of several members of the Institute for the study of important works of decorative art there.

Mr. Sibthorpe made a suitable reply, giving a short account of the experiences of his party in Italy.

The President also proposed the health of "The Visitors," which was humorously replied to by Sir Robert Cranston (Lord Provost of Edinburgh) and Mr. Hugh Stannus.

Mr. Frank Cowtan proposed the health of the Secretary, which was replied to by Mr. Englefield.

On Tuesday morning a party of the members met in the Italian Court of the South Kensington Museum and were conducted by Mr. Kendrick, one of the officers of the Museum, to view the coloured models of Italian decoration, the old English panelled rooms, and other interesting examples. They were subsequently taken to the Library, where the beautiful collection of coloured drawings by Gruner, Fox, and others, from ancient examples of decoration, were displayed for their advantage by the librarians.

The annual general meeting of the Institute was held the same afternoon in Painters' Hall.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. E. A. Cornwall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Camberwell Borough Council 22,637*l.* for paving works, and Hackney Borough Council 11,083*l.* for electric lighting and street lighting.

Payments Under Contracts.—The General Purposes Committee recommended, and it was agreed—

"(*a*) That paragraph 4 of standing order No. 217 be rescinded.

(*b*) That the following be substituted for paragraph 4 of standing order No. 217:—

The foregoing system of payments shall not apply to contracts for machinery or contracts for electric lighting installations, and in such cases payments shall be made as follows:—

In contracts for machinery—50 per cent. on delivery of the machinery; 25 per cent. after it has been erected; 15 per cent. after the trial or testing of the machinery; the balance after the expiration of the prescribed period of maintenance.

In contracts for electric light installations—80 per cent. of the contract price (less extras) on the completion of the work; the balance after the expiration of the prescribed period of maintenance."

Repairs to Buildings on a Printed Schedule of Prices.—The following recommendations of the Education Committee were agreed to:—

"(*a*) That the offer of Messrs. Marsland & Sons to continue to execute repairs to school buildings in groups 3 and 4 (Southwark district) at their present contract rates, pending the acceptance of fresh tenders for the execution of the work in the whole of the county, be accepted.

(*b*) That the offer of Mr. M. Pearson, the contractor for executing repairs to schools in group 3 (Marylebone district), to undertake, temporarily, the work of executing repairs to schools in groups 1 and 2 (Marylebone district), at an addition of 15 per cent. on the printed schedule of prices for (*a*) measured work, (*b*) sanitary work, and (*c*) day work, as from March 24, 1905, pending the acceptance of fresh tenders for the execution of the work in the whole of the county, be accepted."

Non-Provided Schools.—The following recommendation of the same Committee was agreed to:—

"That a statement of the facts with reference to the condition of the Park Chapel (N.) school, (B), King's-road; (G) Park-walk; and (I) Camera-square (Chelsea) be communicated to the managers of the school; and that they be informed that, in the opinion of the Council, the premises are unsuitable, from the point of view of structure, for the purposes of elementary education, and

that the Council will feel it necessary to submit a statement of the facts to the Board of Education."

Tramways.—The Highways Committee recommended—

"(*a*) That an underground conduit system of electrical traction, similar to that approved by the Board of Trade in its letter, dated January 7, 1905, for use on certain portions of the Council's (Northern) Tramways, be adopted for the construction of the tramways in Defoe-road, Garratt-lane, South-street, Red Lion-street, and York-road, being part of tramway No. 12 authorised by the London County Council (Tramways and Improvements) Act, 1901, and for the reconstruction of so much of the tramways acquired from the late South London Tramways Company as are situated in North-street, York-road, Battersea Park-road, Nine Elms-lane, Wandsworth-road, Albert Embankment, Lambeth Palace-road, Stangate, Lambeth-road (between Lambeth-bridge and St. George's-circus), and Falcon-road (between Clapham Junction and York-road); and that the necessary drawings and description of the system be submitted to the Board of Trade for its approval, and to the Councils of the Metropolitan Boroughs of Battersea, Lambeth, Southwark, and Wandsworth, in accordance with the provisions of the London County Tramways (Electrical Power) Act, 1900, and the London County Council (Tramways and Improvements) Act, 1901.

(*b*) That the estimate of 351,900*l.*, submitted by the Finance Committee, be approved. . . ."

The recommendations were agreed to after discussion and the defeat of a motion to refer the matter back.

Street Widening.—The Improvements Committee recommended, and it was agreed—

"That the estimate of 10,500*l.*, submitted by the Finance Committee, be approved; that consent be given under section 72 of the Metropolis Management Amendment Act, 1862, to the widening of Church-street, Stoke Newington, between Nos. 10 to 40 (even numbers), proposed to be undertaken by the Council of the Metropolitan Borough of Stoke Newington in accordance with the plan presented to the Improvements Committee; that a contribution be made on the usual conditions of half the net cost of the improvement, provided, however, (i.) that if the total net cost exceed 21,000*l.* the Council's contribution shall be limited to 10,500*l.*, and (ii.) that in the execution of the improvement no departure whatever be made from the approved plan, except with the previous sanction of the Council."

Sewage Polluted Watercress.—The following recommendations of the Public Health Committee were agreed to:—

"That the report by the medical officer, to which are appended reports by the chemist and Dr. Houston, on watercress and watercress beds in the neighbourhood of London be published, and that copies thereof be placed on sale; that a copy be sent to the Local Government Board, with an intimation that the Council will be prepared to submit for the consideration of the Board details of the localities referred to in the report, should the Board desire this information; and that a copy be also sent to each of the metropolitan borough councils."

Pier Contract No. 1—Sub-letting.—The Rivers Committee recommended, and it was agreed—

"That the Westminster Construction Company, Limited, be allowed to sub-let the under-mentioned portions of the work in connexion with the contract for the construction of new piers at Hammersmith and Millwall and the partial reconstruction of the piers at Putney and Wandsworth to the firms hereinafter referred to, or to such other person or firm as may be approved by the engineer, under the contract, namely, (1) the construction and supply of the pontoons, etc., to Messrs. J. L. Thornycroft & Co., Limited, Chiswick; and (2) the dredging to the Tilbury Contracting and Dredging Company, Limited. . . ."

Manor Asylum.—It was agreed to erect an isolation hospital, disinfecting house, and apparatus, at Manor Asylum, at an estimated cost of 3,800*l.*

London Building Acts Amendment.—The Building Act Committee brought up the following report:—

"We have considered as to the course which it is advisable to take with regard to the provisions contained in the parts of the London Building Acts (Amendment) Bill, 1905, which have been withdrawn. The Council will remember that, as the result of a compromise arrived at on March 14, 1905, at the House of Commons, between the members of Parliament in charge of the London Building Acts (Amendment) Bill, and of the City of London (Escape from Fire) Bill, and other opponents of the Council's Bill, it was agreed to drop all parts of the Council's Bill with the exception of Part VIII. (Means of Escape from Fire). Many of the suggested amendments which have thus been withdrawn not only affect the work of other committees of the Council, but in our opinion are quite as necessary in the public interest as those relating to escape from fire. We therefore think that the Council will desire that every effort should be made to introduce in the session of 1906 a Bill dealing with the more necessary amendments.

The Council has always welcomed suggestions, or criticisms of its proposals, for the amendment of the London Building Acts, and we have no doubt that it will wish that advantage should be taken of the opportunity, which is afforded by the withdrawal of the majority of the suggested amendments, of fully considering the views of the various bodies concerned, even though the adoption of this course may prevent us formulating our proposals in time to enable the Parliamentary Committee to have all of them before the summer recess. Moreover, as many of the provisions in the Bill introduced in the present session will form the basis of any future Bill for the amendment of the London Building Acts, and these provisions have been considered in detail by the Parliamentary Committee, it appears to us that the standing orders relating to legislative proposals may be considered as not strictly applicable, or in any event that the Council would consider it a case in which, if necessary, some indulgence should be granted. The Bill which was introduced in the present session has been, since the beginning of the year, before the Corporation of the City of London, the Councils of the Metropolitan Boroughs, and various professional and other bodies, but as some of the amendments are dealt with by reference to sections in the Act of 1894, it has been stated that difficulty is experienced in understanding them.

In order to remove this difficulty the Parliamentary Committee, at our suggestion, gave instructions for the preparation of a document showing the effect of the Bill on the existing Acts, and we are of opinion that a copy of this document should be sent to the various bodies concerned with an intimation that the Council will be glad to consider any observations which they may wish to make on the Council's proposals, or any additional suggestions for the amendment of the London Building Acts. These observations ought, if possible, to be considered before the summer recess, and it would therefore seem desirable that the Council should fix June 10, 1905, as the last day for the submission of observations. It is hoped that all the bodies concerned will co-operate with the Council in an earnest endeavour to introduce in the next session of Parliament a Bill containing all necessary amendments to the London Building Acts. It is very probable that many persons will want a considerable number of copies of the document which was prepared by the Parliamentary Committee, and we therefore propose that it should be placed on sale. We also think that a very useful purpose would be served if a memorandum on the same lines as the one which has already been sent to the members of the Council explaining in general terms the nature of the suggested amendments were sent to each member of the various bodies to whom the Bill will be sent. We recommend that with a view to the introduction in the session of 1906 of a bill to amend the London Building Acts, copies of the document prepared by the Parliamentary Committee showing the effect of the London Building Acts (Amendment) Bill, 1905, on the existing Acts be sent to the Corporation of the City of London, the Councils of the Metropolitan Boroughs, and the various professional and other bodies concerned, with an intimation that the Council would be glad to be acquainted before June 10, 1905, with any observations which they may make on the suggested amendments to the London Building Acts."

The recommendation was agreed to.

Artizans' Dwellings.—Replying to questions as to the progress of the housing scheme at Tottenham,

Mr. Sears, Chairman of the Housing Committee, stated that no elementary school had been provided for the children of the tenants, and the principal market was some distance away from the houses. He hoped, however, that the Council would soon build the necessary shops. The tenants had to pay rates direct, because the local authority would not agree to compounding. The houses now built covered 5 acres, 141 houses had been built, and 31 were occupied. The rents charged ranged from 5s. 6d. per week to 9s. 3d., and the rates to be paid amounted to 1s. 6d. and 2s. 9d. per week. The cost of the cottages was 36,000*l.*

The Council, having transacted other business, adjourned.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Westminster.—A one-story shop upon part of the forecourt of No. 121, Victoria-street, Westminster (Mr. A. C. Forrester for Mr. F. Hazell).—Consent.

Woolwich.—A Wesleyan church, to be known as the Walford Green Memorial Church, on the west side of Westmount-road, Eltham Park, between Earlshall-road and Elibank-road (Messrs. Gordon & Gunton).—Consent.

Clapham.—A porch at No. 32, Rodenhurst-road, Balham (Mr. T. J. Lynes).—Consent.

Fulham.—An iron balcony at Lillie Bridge-mews, Seagrave-road, Fulham (Mr. W. Hancock for Messrs. C. R. Rolls & Co.).—Consent.

Kensington, South.—The retention of a wood and iron shed on part of the forecourt of No. 3, Pembroke-villas, Kensington (Mr. F. C. H. Safford).—Consent.

Paddington, South.—The retention of a show-case at the "Junction Arms" public-house, No. 28, Praed-street, Paddington (Mrs. J. Hunt).—Consent.

Strand.—A balcony at the second floor of Nos. 24 and 25, St. James's-street, St. James's (Mr. F. E. Williams for Mr. W. C. Cutler).—Consent.

Strand.—Balconies at the second, third, and fourth floors of No. 23, St. James's-street, St. James's (Messrs. H. H. & M. E. Collins for Mr. W. A. Brigg).—Consent.

Strand.—Balconies at the second, third, and fourth floors of Nos. 26 and 27, St. James's-street, St. James's (Messrs. H. H. & M. E. Collins for Messrs. Banting & Son).—Consent.

Wandsworth.—A wooden hood at "The Marguerites," Umbria-street, Wandsworth (Messrs. Read & Wilkinson for Mr. C. C. Potier).—Consent.

Westminster.—An addition to the Westminster Technical Institute, Vincent-square, Westminster (Mr. P. N. Ginham for the Education Committee of the Council).—Consent.

Westminster.†—A covered entrance in front of No. 82, Vincent-square, Westminster (Mr. R. S. Ayling for Miss E. Murray Smith).—Consent.

Chelsea.—An iron and glass shelter at the main entrance to the Cadogan Hotel, Sloane-street, Chelsea (Messrs. Brown & Barrow for Mr. T. W. Lassam).—Refused.

Dulwich.—Buildings at the rear of No. 117, Lordship-lane, Dulwich, to abut upon Shawbury-road (Messrs. H. Wakeford & Sons for Mr. W. Morton).—Refused.

Hammersmith.†—The retention of a projecting sign at No. 22A, King-street, Hammersmith (Messrs. Davies & Co. for Messrs. Levy & Co.).—Refused.

Hammersmith.†—A one-story building at the rear of No. 23, Kenmont-terrace, Harrow-road, Hammersmith, to abut upon Letchford-gardens (Mr. G. A. Sexton for Mr. Winter).—Refused.

Fulham.—A deviation from the plan approved as regards the lines of frontage of Baron's Court Station, Gliddon-road, and Margravine-gardens, Fulham (Mr. G. Estall for the Metropolitan District Railway Company).—Consent.

Width of Way.

Woolwich.—A one-story building at the rear of No. 1, Thomas-street, Woolwich, to abut upon Love-lane (Mr. J. O. Cook for Messrs. Hodgson & Morgan).—Consent.

Peckham.—A two-story building on a site between No. 27 and 29, Stafford-street, Peckham (Messrs. F. Ward & Sons for Mellins Food Company).—Consent.

Width of Way and Lines of Frontage.

Peckham.—Two houses on the west side of Rye Hill-park, Peckham, northward of No. 42 (Messrs. Still, Wheat, & Luker for Mr. C. Goddard Clarke).—Consent.

Bow and Bromley.—A urinal and infants' offices at the Alton-street school (Mr. T. J. Bailey for the Education Committee of the Council).—Consent.

Kensington, South.—A one-story addition at the rear of No. 49, High-street, Notting Hill, to abut upon Uxbridge-street and Newcombe-street (Messrs. C. Bell, Withers, & Meredith for Messrs. Boots, Ltd.).—Consent.

Southwark, West.—A building on a site abutting upon the north-western side of Lambeth-road and southern side of Barbel-street (Messrs. H. F. Tasker & Slater for a community of Roman Catholic charitable ladies).—Refused.

Islington, South.—Buildings upon the sites of Nos. 36 and 37, Popham-road, Islington, to abut also upon Norfolk-street (Mr. H. Smith for Messrs. West & Co. and Mr. C. King).—refused.

Wandsworth.†—One-story shops upon the forecourts of Nos. 1 and 2, Totterdown, and Nos. 1, 2, 3, 4, 5, and 6, High Street-row, Tooting (Messrs. D. Young & Co. for Mr. E. Everitt).—Refused.

Lines of Frontage and Construction.

Islington, East.—The retention of a potting-shed at No. 2, Highbury New-park, abutting upon Highbury-grove, Islington (Mr. T. G. Walker).—Consent.

Lines of Frontage and Space at Rear.

Paddington, North.—A deviation from the plans approved for the erection of buildings on the north side of Harrow-road, Paddington, westward of No. 474, so far as relates to the erection of the back additions of the buildings (Mr. J. H. Bethel for the London and South-Western Bank, Ltd.).—Consent.

Formation of Streets.

St. Pancras, North.—That an order be issued to Messrs. Thurgood & Martin sanctioning the formation or laying-out of new streets for carriage traffic upon the Brookfield estate, Highgate, to lead out of Swains-lane, St. Albans-road, and Croftdown-road (for Mr. W. Burdett Coutts, M.P.)—Consent.

Means of Escape at Top of High Buildings and Projections.

Strand.—That Mr. W. Woodward be informed that the Council has considered the block and sixth floor plans and section A.B., submitted by him for Messrs. Rowland Ward & Co., showing the means of escape in case of fire proposed to be provided on the sixth (top) story of Nos. 166, 167, and 168, Piccadilly, and that upon completion to the satisfaction of the Council of the said means of escape, the Council will issue a certificate under the said section.—Agreed.

Strand.—Projecting oriel windows and balconies to Nos. 166 to 173, Piccadilly (Mr. W. Woodward).—Consent.

Deviations from Certified Plans.

Marylebone, East.—Deviations from the plan certified by the District Surveyor, under section 43 of the Act, so far as relates to the proposed rebuilding of No. 130, Great Portland-street, St. Marylebone (Mr. F. Foster for Mr. A. Rozier).—Consent.

St. George, Hanover-square.—Certain deviations from the plans certified by the District Surveyor, so far as relates to the proposed rebuilding of Nos. 175 and 176, New Bond-street, St. George, Hanover-square (Mr. A. M. Ridge for Messrs. A. Tooth & Sons).—Consent.

Means of Escape at Top of High Buildings.

St. George, Hanover-square.—Means of escape in case of fire proposed to be provided in pursuance of section 63 of the Act on the fifth (top) story of Nos. 6 and 7, George-street, Hanover-square, the upper surface of the floor of which story is above 60 ft. from the street level, for the persons dwelling or employed therein (Mr. C. H. Worley).—Consent.

The recommendations marked † are contrary to the views of the local authority.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—A meeting of the Edinburgh Architectural Association was held on the 29th ult. in the rooms of the Association, 117, George-street—Mr. J. T. Baillie presiding. The Chairman made reference to the loss which the Association had sustained in the death of Mr. George Henderson. He said that the work which Mr. Henderson did, at home and abroad, far and near, diversified and varied as it was in character and style, was always marked by scholarly as well as practical knowledge, and by well-trained taste; and the lasting results were things of beauty and usefulness, monuments of his own skill, and examples and models for the instruction of others.—Votes of thanks were awarded to the convener and members of the County Council of Mid-Lothian for permission to visit the new County Buildings, and to Messrs. John Ritchie & Co. for facilities granted for inspecting *The Scotsman* new offices. Thereafter Councillor M'Arthy delivered a lecture entitled "The Royal Mile—the Castle to Holyrood." Mr. M'Arthy gave an account of the numerous buildings of historical value to be found in the thoroughfare connecting the Castle and Holyrood. His main object, he said, was to rouse interest in the remaining links with the past, and, if possible, to do something to secure their preservation. The lecture was illustrated by a series of limelight views.——At a meeting of the Association in the hall, 117, George-street, Edinburgh, on the 4th inst.—Mr. J. T. Baillie, vice-president, in the chair—the subject of the statutory qualification of architects was discussed. The Chairman said the movement had been set on foot many years ago.—Mr. W. S. Cross (London) said the present position of their profession was eminently unsatisfactory, for while the work of modern architects often displayed a large amount of creative power or originality that attribute was rarely accompanied by architectural scholarship. In this respect they had much to learn from the architecture of ancient Greece and Rome. He pleaded for a higher standard of culture among architects. He dealt with the Royal Institute of British Architects, and said that in its prestige and influence it was amazing it had taken so small a part in any proposals for registration. The leading principles of the scheme of reform should include a Bill in Parliament tending to increase the prestige of the Institute, and to constitute it the examining and registration authority. The scheme would afford reasonable facilities to enable every competent architect and student to obtain registration, and would close the door of the profession to incompetent practitioners. The Institute might introduce means for the practical training of architects, and endeavour to induce Universities to create chairs of architecture, so that the profession would be raised to a status which would ensure that architects of the future would be trained and cultured men.—Mr. G. A. T. Middleton said their aim was to put the architectural profession on the same level as the medical profession, so that no man should practise as an architect unless properly trained and properly qualified by adequate examination.—Mr. Henry F. Kerr said he doubted the practicableness of the proposed compulsory registration by Act of Parliament, and that progress in raising the standard of the profession would be better made by encouraging the taking of the diploma of the Institute.—Messrs. Robertson, Ross, and M'Arthy commended the proposal for compulsory registration on the ground that the profession suffered grievously from the competition of untrained and unskilled men, such as masons and joiners, who put up their door-plates and called themselves architects.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The ninth annual meeting of the Three Towns Branch of the Devon and Exeter Architectural Society took place on Thursday evening, the 30th ult., at the Athenæum, Mr. B. Priestley Shires, Chairman of the Branch, occupying the chair. The Hon. Secretary and Treasurer (Mr. E. Coath Adams) read the annual Report and presented the balance-sheet. The Report stated that the membership had increased, but the Council regretted to have to record the decease of Mr. J. H. Dwelley, one of their members, who always took a deep interest in the Society's work. The annual exhibition of R.I.B.A. prize drawings was held in the Athenæum, and was well attended. The Committee had also much pleasure in reporting that the special prize offered by the Council of the parent society at Exeter had this year been awarded to Mr. Harold R. S. Shires, an Associate of the Branch. The question of the memorial to the Special Works Committee of the Town Council of Plymouth on the proposed amendment to the building by-laws was still unsettled, but a hope was expressed that something would soon be accomplished. Registration of architects had now assumed practical form, and was being supported by the Royal Institute of British Architects and most of the societies allied to the Institute. Mr. A. S. Parker, past Chairman of the Branch, represents the Devon and Exeter Society on the R.I.B.A. Committee who have charge of the Bill that is being put forward for presentation to Parliament. The Treasurer's Report showed a balance in favour of the Society. Mr. B. Priestley Shires, in moving the adoption of the Reports, observed that what they wanted was a keener interest amongst the junior members of the profession, and he suggested they should use their room at the Athenæum more in the future than had been the case in the past, and by means of classes on some such subject as design a very profitable course of study might be initiated. Further, they should not forget the splendid opportunities offered by the R.I.B.A., and he hoped to see some of their junior members successfully competing for the very valuable honours that awaited those who had courage, perseverance, and a good will to work. Mr. A. S. Parker, in seconding, urged the importance of architects' registration, in which he took a very deep interest, and had the pleasure of representing Devon and Cornwall on the R.I.B.A. Committees in London dealing with the important question. The Reports were then passed. Mr. B. Priestley Shires was re-elected Chairman of the Branch. Mr. E. Coath Adams Hon. Secretary and Treasurer, and Mr. William H. May Hon. Librarian, and all the officers were thanked for their services during the past session.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting on Tuesday, Sir Alexander R. Binnie, vice-president in the chair, it was announced that twelve associate members had been transferred to the class of members, viz., G. Attwood, William Cooper, W. H. Hamer, Arthur Harrison, John Kirkaldy, D. C. Rattray, R. F. Thorp, C. C. Smith, H. E. Stilgoe, J. O'B. Tandy, J. D. Watson, R. O. Wynne-Roberts. It was also reported that 102 candidates had been admitted as students. The monthly ballot resulted in the election of two members, viz., A. L. Forster (Newcastle-on-Tyne), R. T. Rees (Aberdare), and seventy-three associate members.

THE HOUSE OF COMMONS.—Adverting to our recent remarks upon the recommendations of the Select Committee on the ventilation of the House of Commons, we find that, in the Estimates for 1905-6, a sum of 700*l.* is appropriated for that object, together with 2,000*l.* for more efficient heating appliances, improved smoke-shafts, and the purifying of the air of the members' tea and reading rooms, and the Grand Committee-room, Westminster Hall, and 250*l.* for an improved ventilation of the lavatories. Meanwhile, as we read in the *Times*, a new method of ventilating the Press Gallery rooms in the Clock Tower wing has been designed and installed under the supervision of Mr. A. P. Patey, resident engineer. The air is extracted from the rooms through the interstices of the ornamental cornices by means of a powerful fan, set under the roof, which changes the atmosphere several times in the course of an hour.

COURT OF COMMON COUNCIL.

THE usual fortnightly meeting of the Court of Common Council was held on Thursday, last week, at the Guildhall, the Lord Mayor presiding.

The City Engineer.—The Officers' and Clerks' Committee submitted the names of the following gentlemen as the selected candidates for the office of City Engineer:—Mr. W. Blair (Borough Engineer and Surveyor of St. Pancras), Mr. A. E. Collins (City Engineer, Norwich), Mr. W. Oxtoby (Borough Engineer, Camberwell), Mr. N. Scorgie (Chief Engineer, Borough of Hackney), and Mr. Frank Sumner (Borough Engineer and Surveyor, Woolwich). The election will be decided at the next Court.

Paving Works.—The Streets Committee submitted a lengthy report, recommending the repaving, etc., of a large number of City streets, and submitting for acceptance a large number of tenders. The recommendations of the Committee were agreed to. In the course of their report, the Committee also recommended that the sum of 3,483*l.* 11s. 2d. be paid in full settlement of the claims of Mr. A. Woodhouse in respect of reparation of sewers and the construction of house drains. This was agreed to.

The City Mortuary.—The Sanitary Committee submitted plans of the proposed rebuilding of the portion of this building recently destroyed by fire.

Correspondence.

ARCHITECTURAL EDUCATION.

SIR,—The subject of architectural education has received so much consideration of late that any new views on the subject must be read with interest.

In this regard Mr. John Honeyman's paper, published in the *Builder* for April 1, is a little difficult to follow, inasmuch as it is headed "The Institute's New Scheme," but in reality it resolves itself into a review not of the Institute's scheme, as so ably and clearly put forth in Mr. Reginald Blomfield's paper, but into a disquisition on an anomalous state of affairs certainly not obtaining at the present time in England, whatever may be the case across the border.

In several cases Mr. Honeyman raises unnecessary difficulties, for he incorrectly quotes the length of the proposed preliminary course as outlined in Mr. Blomfield's paper. It is there clearly stated that the length of the preliminary training in a school should be two years. Why, therefore, refer to it as the "tuition which he is recommended to obtain during the preceding three years"?

This preliminary training of two years is already an accomplished fact in several centres, and on lines approximating very closely to those suggested by the Board.

It is not, however, with Mr. Honeyman's criticisms of the Institute scheme (based as these appear to be upon a misapprehension of what that scheme is, and how it is actually to be worked in practice) that I propose to deal, but with the suggestions which he himself makes, and which presumably he puts forth as being within the limit of practical working.

Throughout the whole of his paper there appears to be some confusion between what obtained in the old days of lengthy pupilage and of what should obtain in a system of preliminary school training. For instance, it is apparently assumed that with the school training the student would only receive the same length of holiday as hitherto given with the pupilage system, and a month's holiday is recommended in the first year. May I point out that the actual and practical working of a school course could not possibly be continued throughout the year with only a month's break, but must be divided into terms with vacations of reasonable length, both for teachers and taught, and the former would certainly not thank Mr. Honeyman for his suggestion that a month's holiday is all that is required.

Everyone will surely agree with him that "the student ought to have not only enough of time for recreation, but also for sketching and measuring and visiting interesting localities." The average school course amply provides for these important subjects, giving as it does short vacations at Christmas and Easter and a long summer holiday, during which the student is encouraged to measure and study old work and generally continue his self-education.

When all is said and done the real education

of the architect is never completed, and the aim of any education worthy the name is to train the student to teach himself. These vacations serve then a double purpose. They give the student an opportunity of carrying on his work without, and away from, any supervision, and they give the teacher the opportunity of discovering how far the student has been able to profit from the training he has already received in this regard.

It is a little difficult to see how a student who is advised to work nine hours daily can find time for "cricket, golf, or drill," as also suggested. It is still more difficult to see how the student in his first year's holiday is to combine sketching and measuring work with "going into the counting-house of a merchant or accountant," or how in the second summer he is to combine it with gaining "some insight into the mysteries of quantity surveying and specifications" in a surveyor's office. Surely, too, the place for specifications is in conjunction with the work in the studio, and in an *architect's* office.

It is equally difficult to follow Mr. Honeyman's plea for dividing the time in the fourth year between the office and school, giving four hours and a half to the former and four hours and a half or more to the latter.

How is this to be worked? The ordinary London office opens at 9.30 a.m. Is the student to work there until two o'clock, and then, having obtained his lunch and conveyed himself to a conveniently situated school by, say, three o'clock, to work there until 7.30 p.m.? What of the teachers in this case, and, incidentally, what of the office blessed, or shall we say burdened, with such a student, who relinquishes his pencil each day at two, not to return until the next morning?

But perhaps the crux of Mr. Honeyman's proposals is reached when he suggests that the architect thus blessed should keep and pay a sufficient staff to do his work without the aid of this "accomplished draughtsman." Of what value, then, is the accomplished draughtsman to his chief, be his "half-time services" ever so free? Indeed, he would be a costly appendage, inasmuch as office room would have to be provided for him, though he himself provides nothing except his partial services, which, however, are not really required!

These, then, appear to be serious difficulties, and it is hard to me how such a scheme as Mr. Honeyman proposes could be worked in practice. H.M.

"BANISTERS."

SIR,—I am grateful to Mr. Walker for his letter. I did not wish or intend to imply that the spelling, or miss-spelling of the word was a *novel* one; but, in our enlightened days, surely it would be better to spell it correctly? If not, the spelling of surnames in old pedigrees might be justified on the score of antiquity, generation after generation changing it with delightful freedom and irregularity. This would hardly be thought worthy of imitation now. E. SWINFEN HARRIS.

"GEARY, WALKER & CO., LTD., *v.* LAWRENCE & SON."

SIR,—Permit me to point out, through the medium of your columns, that I have no connexion in any way whatever with the above-named plaintiff firm; consequently, am not concerned in this case. A. E. GEARY.

(Ellis, Geary, & Co.)

139, Cannon-street, E.C.

THE LATE SAMUEL JOSEPH NICHOLL.

SIR,—May I venture to correct an unintentional and pardonable error in your otherwise admirable and most accurate obituary notice of my dear old friend, the late Samuel Joseph Nicholl, which appeared in your last issue.

The great reredos and altar, which fill the entire east wall of Wilson and Nicholl's church of St. Charles, Upper Ogle-street, Marylebone, were designed by the late John F. Bentley, in the late sixties; and the paintings were the work of Mr. W. H. Westlake, as I well remember (being resident in London at the time) visiting Mr. Westlake's studio with Bentley when the pictures were in hand.

Unfortunately I learn that a firm of decorators have been of late allowed to varnish and seriously impair the effect of this most interesting series of paintings.

CHARLES HADFIELD.

Sheffield, April 4, 1905.

"RESTORATION" AT YORK MINSTER.

SIR,—As a Freeman and resident of York, will you permit me to use your columns to protest against the modern spirit of restoration which is, even now, despoiling and disfiguring our glorious Minster?

During the last hundred years the Minster has been "restored" to such an extent that now it is hardly possible to find an original stone on the exterior of the building.

The excuse for this rebuilding has been that the fabric was in danger, and that, therefore, it was necessary to take down the old stones, get masons to make copies of them, and put the new into the place of the old.

Whether this excuse be valid or not I leave your readers to judge.

There can be no excuse of this kind, however, for the innovations which are now being carried out on the north side of the nave. I use the word innovations advisedly, because there is absolutely no precedent for what is being done.

When the builders of the Minster began the building of the nave, it was their intention to cover it with a stone vault. The width of the space between the walls, however, seems to have so effectually frightened them, that, instead of a stone vault, they erected a roof of wood, groined and painted to look like stone. The arrangements that were made for supporting the clerestory walls with flying buttresses were abandoned on this change of plan, and on the south side of the nave are still to be seen the heavy pinnacles, each with its statue, which were erected for the purpose of resisting the thrust of these buttresses.

On the north side, however, the Archbishop's palace, built by Walter-de-Gray, was still standing, and the builders, evidently thinking that this side would not be so much exposed, only carried the wall buttresses to the roof of the nave aisle. They also left this side much plainer than the south, with the result that the view of the Minster from the north is much more imposing and majestic than the one from the south. The range of the nave clerestory windows, unbroken by any pinnacles, the tall lancets of the Five Sisters' window, crowned with the square central tower, present a view which, once seen, will never be forgotten. Mr. Clutton Brock and other authorities have remarked on its dignity and beauty. Imagine our dismay when we were told that pinnacles in exact imitation of those on the south are to be placed on these north side buttresses, and that these pinnacles are to be connected to the clerestory walls with flying buttresses! Now, as I have said, the excuse of restoration cannot apply here. There is absolutely no precedent for this work.

From an artistic point of view it will break up the range of clerestory windows, while nothing will be gained, as the work is to be only an imitation. From the historic standpoint, the change is still more to be regretted. This very part of the Minster illustrates, in a most admirable manner, that Gothic spirit which could be at once so fantastic and so grand in its reverence.

It is as though someone who had a most beautiful and precious manuscript were, in order to show how well he could write, to introduce specimens of his penmanship on to its pages.

I hope that someone, much more able than myself, will be led to protest so strongly that the work will have to be abandoned, and the money put to better use. RICHARD HAWKINS.

York, April 4, 1905.

P.S.—Enclosed please find photo which clearly shows the buttresses above referred to.

PETITION *re* REPAVING OF WATERLOO BRIDGE-ROAD.

SIR,—We beg to bring to your notice that the above petition came before, and was discussed by, the Highways Committee of the Lambeth Borough Council this week, when it was decided to rescind the resolution to repave the above road with granite setts, and to carry out the work in wood as heretofore.

We have much pleasure in tendering to you the most heartfelt thanks for the kind way in which you brought our grievance before the public, and we feel that the passing of the above resolution is due, to a large extent, to the way the Press took up the question.

J. H. DEAKIN.

For the residents, ratepayers, and occupants of the Waterloo Bridge-road.

GIBBON *v.* PEASE.

SIR,—The remark made by one of the learned judges in this case about plans of drains illustrates well the absence of knowledge of the subject they were dealing with which distinguished the court. The drain plan to which the building-owner is entitled under this judgment is the *contract drain plan*. So generally are the drains varied in execution, that, in at least nineteen cases out of twenty, such a plan would be merely misleading. What the client wants, and what he usually gets already, is a plan of the drains as executed—a very different matter.

F. H. A. HARDCASTLE.

Illustrations.

THE UNITED STATES NAVAL ACADEMY, ANNAPOLIS.

OUR lithograph plates this week are entirely occupied with illustrations of the immense and stately group of buildings which the United States Government are erecting as a Naval College at Annapolis, from the designs of a well-known architect, Mr. Ernest Flagg, of New York.

The two general views give an idea of the spacious and grandiose arrangement of the buildings and of the site generally; and a geometrical plan will be found on another sheet. Unfortunately the drawings, which, as will be recognised, are exceedingly French in style, follow also the French system of giving no scale on a plan, so that we can only judge of the size of the buildings by conclusions from their proportionate relation to their surroundings.

The Academy is situated on the margin of the Severn River, with a basin in front of it partly shut in by two moles each carrying a lighthouse at its extremity. From the margin of the basin extends a central garden, with an amphitheatre of steps at the lower portion, the band-stand forming the centre of this semi-circle. At the top of the garden the domed chapel closes the central vista. The Academy building and the Cadets' Quarters flank the garden to right and left. Behind the Cadets' Quarters is the Memorial Hall, of the interior of which we give a view; the architectural details of this furnish to a certain extent a scale of the interior, as the view of the central entrance does for the exterior; if, that is to say, the figures are put in to the true scale. The photographs sent to us, from which these illustrations are reproduced, are all from drawings, and a very fine set of drawings the originals must have been.

In regard to the progress of the work, the Armoury, the Boat House, the Marine Engineering building, and the Officers' Mess are now completed; the Cadet Quarters, Chapel, and Officers' Houses are more than half completed; and the Academy building has been commenced.

As a general rule it is very difficult to induce American architects to send illustrations of their buildings across the sea, and we feel therefore the more indebted to Mr. Flagg for his courtesy in immediately acceding to our request for some illustrations of his great scheme, and sending us the portfolio of photographs which are here reproduced.

METROPOLITAN PNEUMATIC DISPATCH COMPANY.—In response to representations made by the Corporation of the City of London and the London County Council, the Home Secretary has expressed his opinion that the Company's proposed Bill should not be proceeded with until the Royal Commission, which now has under consideration the question of London traffic, has presented its report, in view of the great inconvenience which will result to the inhabitants of London from so extensive an interference with the streets as is contemplated in the measure. The project embraces the erection of a generating station near Woodlane Farm, Shepherd's Bush, and the laying down of 12-in. tubes, in double lines, with wires, cables, etc., extending over ninety-five miles in length, and with 150 stations, for the conveyance of parcels and messages. The promoters seek for powers to adopt the American system of the Batcheller Pneumatic Tube Company, and their scheme revives, in effect, one that was attempted in 1859-60, when Mr. Latimer Clarke and Mr. T. W. Rammell, as joint engineers, laid a tunnel, constructed by Mr. John Aird, of cast-iron ⊂-shaped sections, 1 in. thick, and measuring 4 ft. by 4 ft. 6 in., beneath Newgate-street, Holborn, New Oxford-street, Tottenham Court-road, Hampstead-road, and Drummond-street for carrying mails and parcels from the General Post Office to Euston terminus. The engine-house was situated between Whetstone-park and High Holborn, at the rear of the Soane Museum; it was found, however, that the engine, even when worked up to 800 h.p., could not maintain the vacuum required for the desired speed of the train of cars, as there existed leakages of air and certain mechanical defects in the tunnel.

COMPETITIONS.

LAMBETH MUNICIPAL BUILDINGS.—At the meeting of Lambeth Borough Council, on March 30, the General Purposes Committee reported that the Council, on December 22, adopting a suggestion of the Royal Institute of British Architects, agreed to exhibit the designs (with certain exceptions) submitted in the Municipal Buildings Competition, and such decision was included as part of the conditions of competition. About 170 architects have applied for copies of the conditions and plans, and have paid the 1*l.* deposit, and it is possible that 150 designs will be submitted. Each design may consist of six and eight separate plans, and as it was obvious that a considerable space would be taken up in the arrangement of the plans, both for the purposes of judging by the assessor and also for the public exhibition, the Committee had obtained the use of the Prince's Hall for the display of the designs. The report was adopted, and authority was given the Committee to make the necessary expenditure for fixing the frames and staging. The last day for sending in designs is the 15th inst.

SCHOOL, ACCRINGTON.—Messrs. Fairhurst & Holt, architects, of Blackburn, Manchester, and Liverpool, have secured the first premium of 50*l.* in the competitive designs for the new Council School near Royds-street, Accrington, to accommodate 1,000 scholars, and which is estimated to cost about 15,000*l.* The second and third premiums, 25*l.* and 10*l.* respectively, go to Messrs. Shaw, Vowles, Sproat, & Clayton, of Burnley. Messrs. Fairhurst & Holt have been entrusted with the erection of the school.

WEST ISLINGTON PUBLIC LIBRARY.—The Public Libraries Committee of Islington Borough Council reported on Wednesday that the assessor (Mr. J. Belcher, A.R.A.) had nominated Professor Beresford Pite for appointment as architect in connexion with the branch library to be erected in West Islington.

BOOKS RECEIVED.

A HISTORY OF ENGLISH FURNITURE: THE AGE OF OAK. By Percy Macquoid. (Lawrence & Bullen. 2*l.* 2s.)

PICTORIAL COMPOSITION AND THE CRITICAL JUDGMENT OF PICTURES. By Henry R. Poore. (B. T. Batsford. 7s. 6d.)

THE APPRECIATION OF SCULPTURE. By Russell Sturgis. (B. T. Batsford. 7s. 6d.)

PAINTERS' OILS, COLOURS, AND VARNISHES.—Edited by Paul N. Hasluck. (Cassell & Co.)

THE MECHANICAL HANDLING OF MATERIAL. By Geo. F. Zimmer, A.M.Inst.C.E. (Crosby Lockwood & Son.)

ROBERT ADAM, ARTIST AND ARCHITECT. By Percy Fitzgerald, F.S.A. (T. Fisher Unwin.)

TRADE CATALOGUES.

MESSRS. E. & R. GITTINS, of Waterloo-street, Birmingham, send us their new illustrated catalogue of metal work for ecclesiastical and domestic decoration. The photographic illustrations show remarkably good work, and many of the designs are excellent; they are more sober, and show less of the influence of the pernicious *art nouveau*, than any metal-work we have seen recently. It has been the fashion lately to twist and contort the material into vegetable and muscular forms quite unsuited to iron work. We believe that there is a real demand among architects for simple smith's metal work, the simpler the better. Where complexity is necessary or desirable, let it be of the kind to be found in the Ironwork Gallery at the South Kensington Museum. How hard is it to get a well-made thumb latch of quiet and reasonable design, or a pair of strap hinges to hang an oak door! Much of the charm of mediæval domestic and church architecture lies in the smith's work, the locks, the hinges, the hearth, and its surroundings. When these things do receive attention in modern buildings, they are too often pretentious and affected to the last degree. Messrs. Gittins have evidently studied their craft with thoroughness and judgment, and we shall hope to see their catalogue improve year by year. Their subject is inexhaustible, like every craft, and it is only the craving after novelty that can do it harm.

Messrs. W. H. Birge & Sons, wallpaper manufacturers, whose headquarters are at Buffalo, U.S.A., have sent us their illustrated book of patterns for 1905, having the address of Regent House, Regent-street, W. Many of the papers shown at this address are artistic productions of merit, fresh and pleasing in colour and design. They show ingenious combinations of patterns, which enable a room of any size to be treated in panels. Friezes are shown capable of various treatments which avoid the disagreeable monotony usually attendant on the picture frieze. The leather patterns are perfect imitations of tooled leather. If imitations must be had, the more complete the delusion the better. Some of these patterns are fine copies of the richly decorated leathers of Venice and the Middle Ages. Some of the simple bedroom papers are very bright and pretty and extraordinarily cheap. Altogether the patterns show much that is interesting or novel in wallpaper design.

Messrs. Jeffrey & Co. have sent us their new illustrated catalogue of artistic wall-papers. Their well-known papers maintain the high standard in design to which they have attained in recent years. The papers are made from the designs of such well-known decorative artists as Mr. Allan Vigers, Mr. Walter Crane, Mr. Heywood Sumner, and Mr. Lewis Day. An original landscape frieze by Mr. Neatly is shown; it is much superior to the usual class of repeating frieze. Many of the papers are arranged with a view to the decoration of rooms in panels. There are also shown some very fine reproductions of silk damasks and brocades in flock and other papers.

Messrs. William Lindsay & Co. send us their handbook of "fireproofing" and constructional steelwork. Passing over the first few pages containing photographs representing different buildings, the steelwork and "fireproofing" for which was designed, supplied, and erected by this firm, we come to particulars of a trussed fire-resisting floor, which has been used in many important public buildings. Briefly described, this system consists of rolled steel joists embedded in pumice-concrete, which is reinforced by steel rods passed over and under the joists. The main girders are also encased in concrete, so that they may be protected from the action of fire. In some cases, where spans of considerable width occur between joists, the under surface of the concrete is arched and the ends of the transverse rods are screwed, and, being passed through the webs of the steel sections, are secured by nuts. By the use of pumice-stone a very light and tough variety of concrete is obtained, affording an excellent key for plastering, and a basis to which floor boards can be nailed. The same principle is applied to the construction of domes, mansard-roofs, and spires, and the surface of the concrete may be prepared at option for a facing of tile, slate, lead, or asphalt. Although not representing true concrete-steel construction, this system is a marked improvement on many methods of applying rolled steel and concrete. Two or three pages are next devoted to steel trough flooring, which, when filled above with concrete and suitably protected below, gives adequate resistance to fire, and is of very great strength. The remainder of the book is occupied by tables and drawings of steel stanchions and girders. We are pleased to notice that the latter are listed in accordance with the dimensions of the Engineering Standards Committee.

Messrs. Easton & Anderson send us a circular relative to the "Pluto" hot-air furnace for steam boilers, which is designed so as to secure complete combustion of the fuel at the highest obtainable temperature. The apparatus consists of air-heating pipes placed in the flues, and through which air required for combustion is drawn by means of steam-blowers and delivered through the closed ash-pit to the fire-bars. As the air is delivered at a great heat, it is claimed that the temperature of combustion is much higher than usual, and among the advantages said to be secured by the use of the furnace are saving of fuel, increase of boiler power, and perfect combustion, with consequent prevention of smoke.

We have received from Messrs. Johnson & Phillips, of Charlton, Kent, a pamphlet describing cables and junction-boxes for electric lighting. We note that they have completed large contracts for supplying and laying cables on the solid, drawn-in and armoured systems. The method they employ of armouring concentric cables is very ingenious. This type of cable can be safely laid direct in the earth. The underground main fuse box illustrated is excellently designed. For all practical purposes it may be regarded as water-tight, and yet access can be at once obtained either for making tests or replacing fuses. No brick pit is required for the box, and there are no bolts or nuts on the cover. The pamphlet is well illustrated by photographs of the work of cable laying by this company in various parts of the country.

We have received from the Edison & Swan Company, Limited, of Queen-street, E.C., leaflets describing various novelties. The "Ediswan Pull Type" button switch will be useful in offices and warehouses in those cases where it is inadvisable to run wires and conduits in the usual way. The switch can be fixed on a wall or on the ceiling, and can be operated by a cord. By a distinctly novel arrangement the cord actuates for both the "on" and the "off" positions of the switch. It is stated to be strong mechanically. We know of several cases where the use of a switch of this type would have appreciably lowered the cost of the installation. The "Ediswan" high voltage fuse boards are cheap and well designed, and they stock a large variety of sizes. The leaflets describe "Ediswan" fancy glass shades and globes of most extraordinary shapes and colours. Those who admire "yellow opalescent with green blobs . . .," etc., shades, will find a great variety from which to make a choice.

We have received from Messrs. Johnson & Phillips, of Old Charlton, Kent, a catalogue of their electric lighting cables and wires. The recent advances in the price of electrolytic copper and rubber have necessitated a revision of the prices of practically all the cables quoted in the catalogue. We note that the cables are all tested according to the rules of the Institution of Electrical Engineers, and are divided into three standard grades, namely, 300, 600, and 2,500 megohms. This means, for instance, that if a cable belong to the 600 megohm grade, then, no matter what its diameter may be, its insulation resistance is not less than 600 megohms per mile. We note that Matthiessen's standard is printed Mathiesson's standard throughout the catalogue. This should be corrected in the next edition.

We have received from the Electric Heating Company, London, a catalogue describing a large variety of apparatus for the utilisation of electricity for heating and cooking purposes. The electric heaters, as a rule, are provided with three terminals, by means of which a minimum, medium, and maximum degree of heat can be obtained. They work equally well with continuous and alternating current, and from the thermal point of view the radiators are well designed, the heat radiated and the heat circulated by convection currents in the air being distributed in about equal proportions. Utensils for cooking electrically have naturally a high efficiency, as the heat can be applied exactly where required. When current can be had from the supply company at a cheap rate the desirability of employing it for both cooking and heating is always worth considering. The catalogue is profusely illustrated, and sufficient data are given in all cases to enable any one to calculate the exact cost of the current consumed for the various operations.

We have received from Messrs. Alex. Boyd & Son, of New Bond-street, London, a catalogue entitled, "Electricity Domesticated." Illustrations and detailed descriptions are given of electric radiators, "heat traps," "hot tables," etc. The articles described are in many cases novel, ingenious, and inexpensive. We agree in thinking that, although owing to the present cost of electric power it can seldom be economical to heat large rooms by its means, yet for warming small rooms it is often very economical. The description given of the object of the hot shelf in the radiator is not very scientific. We are told that the "hot air is caught, kept down, and turned to account instead of rising and being wasted at the ceiling." In order that the hot air may be "turned to account," we presume that it warms a large surface which radiates heat throughout the space round the stove. In order to radiate heat well the surface must be hot, and taking the larger surface into account, it may well be questioned whether the convection currents from this surface will not be as large as if there were no hot shelf.

We have received from the Linolite Company the third edition of their catalogue. It will prove interesting to those in search of novel methods of utilising electricity for lighting purposes.

We have received from the Société Gramme,

of Gray's Inn-road, London, a leaflet describing their well-known dynamos for electroplating. These machines are also suitable for many purposes in electrochemistry. They are exceedingly well designed. Standard types of low-tension machines are kept in stock, so that quick delivery can be guaranteed. The smallest machine gives 40 amperes at a pressure of 6 volts, and the largest 1,500 amperes at the same pressure.

Messrs. Merryweather & Sons send us a catalogue they have lately issued relative to wind-pumping machinery. This pamphlet describes and illustrates some useful types of wind-driven engines and pumps, from the small windmill on a timber frame, with a single-barrel pump, to the large wind engine comprising a powerful sail wheel mounted upon a rigidly braced steel tower, and treble-barrel pumps. Machinery of this kind is already used to a considerable extent for the supply of water to country houses, farms, and villages, but deserves far more attention than it has received hitherto, as the motive power is obtainable quite free of cost. It should be noted that the towers, upon which the Merryweather windmills are mounted, are of very substantial construction so as to enable them to withstand heavy winds, and that the sails can be provided with a special automatic governing device in order to prevent damage during the prevalence of gales.

We have received from Elliott's Moulding and Joinery Company (Newbury) three catalogues containing hundreds of illustrations of mouldings for various purposes. The first is entitled "Archi[illegible]tects' Series," and has twelve pages of outline sections of cornices, architraves, panel-mouldings, skirtings, handrails, balusters, and newels. The staircase details are not of much merit, but some of the other mouldings are good of their kind, although the compasses have been too freely used in the design of the curved members. In catalogue No. 7, which is intended for builders, the illustrations are in isometrical projection, and comprise nearly 700 examples of moulded woodwork. Catalogue No. 9 has been prepared for the use of "Cabinet-makers, Decorators, etc.," and contains about 800 examples of panel-mouldings, cornices, picture-rails, chair-rails, plinths, etc.; the members in the panel-mouldings are smaller than those in the builders' catalogue. As a whole, the catalogues may be recommended for ordinary work, although of course they contain many examples which are not satisfactory. An architect possessed of any individuality will prefer to make his own designs.

We have received from the Teale Fireplace Company three catalogues, containing illustrations of their manufactures. The original form of the Teale fireplace is already so well known that further description is unnecessary, but if the catalogues are any indication, the more popular type of grate is now the modified form with raised hearth and without front bars. Nearly all the illustrations show grates of this kind. Great praise is due to the company for the excellent character of many of the designs for mantelpieces and metalwork; they display both originality and good taste. In addition to open fires, the catalogues contain illustrations of stoves suitable for hospitals and schools, and of radiators and heating apparatus boilers.

From Messrs. Alex. Boyd & Son we have received a new and enlarged edition of their "Book of fireplaces, showing varieties of the English open fireplace." Dog-grates of various kinds are the most conspicuous feature of the book. The drawings are in line, and are not altogether satisfactory. We have also received from the same firm a pamphlet describing and illustrating their new patent ventilating fireplace, which is suitable for schools and hospitals as well as for houses and other buildings. The grate stands independently in the fireplace, and panels are inserted between it and the jambs to form a warm-air chamber. An important point is that these panels can be easily removed for the purpose of cleaning the chamber.

The St. Pancras Ironwork Co. send us a neat little catalogue describing and illustrating various types of steam motor wagons for home and colonial use. Several special features are embodied in these vehicles. The forecarriage is constructed on the rocking principle with the object of obviating twisting and jarring of the main frame. Ample boiler power is provided, and, while not of excessive weight, the boiler has enough reserve power to make it easy to keep up a good head of steam. The adoption of a roller chain drive and cut gearing ensures comparatively quiet running, a point which certainly is a desideration for vehicles used in cities and towns.

Messrs. Oetzmann & Co. send us a description and illustration of their "Chameleon" set of furniture, which is specially designed for those who have to live in one room, and make it a bed-sitting room. There is a neat-looking cabinet with drawers of which the upper part opens out into a washing-stand; a bed which by day forms a settee, the pillows, concealed in ornamental cases, forming sofa-cushions; and one or two other compound pieces of furniture carry out the same kind of double arrangement. The thing seems, judging from the illustrations, to be very well done and at a low price, and such a set of furniture may be a great convenience to single people of restricted means.

Messrs. Wright, Brindley, & Gell (Sheffield) send us an illustration and description of their "Holderness" bevel-edged file, the object of which is to make the edge of the file more useful by providing a flat surface on which to cut the teeth, instead of a rounded one. In cutting the teeth on a rounded edge it is impossible to get them to a uniform depth.

Messrs. Charles Winn & Co., of Birmingham, send us a circular illustrating and describing their pipe-screwing machine of the portable type and suitable for screwing iron barrel from ¼ in. to 2 in. diameter, and bends from 1½ in. to 2 in. diameter. This is a compact and well-made machine of a general type familiar to most of our readers.

Messrs. Crosby & Co. (Farnham, Surrey) send us an illustrated catalogue of inexpensive mantelpieces made in oak, walnut and basswood. These are drawn in ink line in the rather scratchy style of drawing which seems for some reason to be considered specially "artistic" just now, and which hardly shows the objects illustrated to the best advantage; but the designs are simple and in good taste; perhaps the simplicity is rather overdone in some of them, but that is better than florid commonplace.

Messrs. James Keeves & Sons have sent us a copy of their well-bound catalogue of 610 pages, containing thousands of illustrations and prices of tin, iron, and japanned ware, ironmongery, cutlery, and tools. Many of the goods are of no particular interest to the architect and builder, but will appeal to the householder. The section on "Brass Foundry and Ironmongery" is of more value to our readers, but even this contains such articles as dog-chains, shark-hooks, and harpoons. The index comprises over 3,000 references, and this will give a good idea of the comprehensive nature of the catalogue.

Messrs. Allan Jones & Co. (Gloucester) have sent us a small catalogue of the "Hatherley" step-ladders, tables, seats, trestles, etc. Some of the ladders are designed for the use of painters and decorators. Jones's patent automatic cupboard fastener is simple and effective.

A small catalogue containing specimens of the "Marpedo sanitary washable water-paint" has been received from Messrs. John H. Fuller & Co. (Reading and London). Twenty-six different colours are shown, the "lemon chrome" being the brightest and the "terra vert" the dingiest. The makers do not say whether any of the colours are unsuitable for use on new plaster, although this is a point on which architects desire information. They inform us that they can incorporate into this paint either eucalyptus, sanitas, or carbolic acid, for the purpose of sterilising it.

Messrs. W. E. Moulsdale & Co. (Liverpool) are the representatives in this country for the Huertgen "Jalousie" roof-light and ventilator. This is an ingenious combination, consisting of a glazed roof-light under which are a number of louvres; the light and louvres are hinged at the back, and are opened by gearing. When open, the appearance of the side is somewhat like that of a half-opened fan. When closed the louvres occupy very little space, and the appearance differs very little from that of an ordinary skylight. The louvres are so shaped as to exclude rain, except perhaps in strong winds.

Messrs. Pearce & Co. have sent us a supplement to their catalogue. It contains illustrations of conservatories, vineries, etc., erected by them at various places, and also a number of testimonials. Detailed descriptions and prices are not given.

A catalogue, with coloured illustrations of tiles for floors, walls, etc., has been received from Messrs. T. & R. Boote (Burslem). The illustrations do not show anything particularly novel; some of the floor patterns indeed have done service for a great many years, if our memory is not at fault. The folding sheet showing various designs for ceramic mosaic is the most artistic in the book.

The C. W. Lewis' Tileries (Stockingford, Nuneaton) send us their catalogue of roofing tiles, ridges, finials, chimney-pots, etc. The prices are not given.

We have received from Messrs. E. & R. Gittens (Birmingham) a delightful catalogue of artistic metalwork, including door-furniture, gates, fire irons, grate fronts, lamps, electric light fittings, etc. We are pleased to note that the name of the designer of the metalwork, Mr. C. A. Llewelyn Roberts, is given on the title-page. Special mention may be made of a Lenten chalice, in wrought silver and ebony, but all the designs are good.

A catalogue from the same town has been sent by Messrs. James Cartland & Son. This is an abridged list of the firm's "brass foundry specialities," including fittings of various kinds for doors and windows. The firm is well known in the trade.

Messrs. Heathman & Co.'s catalogue of ladders, etc., has already been mentioned in these columns, and the new catalogue is on similar lines, but contains some additional illustrations of fire escapes, etc.

Messrs. Hardy & Padmore (Worcester) have introduced a novelty in the method of advertising their manhole covers. Three large sheets containing full-size sections of the covers have been prepared, so that architects and engineers can see at a glance the nature of the seal or joint and the thickness of the metal. On one of the sheets prices and dimensions are given for all the kinds of cover illustrated.

The Student's Column.

TYPICAL STRUCTURES IN CONCRETE-STEEL.—XIV.

EXAMPLES OF THE COIGNET SYSTEM.

FROM among the numerous works executed by M. Coignet, we have selected for mention in the present article three representative examples, which, together with particulars of the methods of construction usually followed, will sufficiently illustrate the distinctive features of the system adopted by this engineer.

Francois Coignet was one of the first to suggest the possibilities of concrete when suitably reinforced by iron, but, unlike Monier and other pioneers, he made no attempt to apply his theory to the design of actual structures. At a later date, however, Edmund Coignet, his son, made reinforced concrete the subject of theoretical and experimental investigation, and, in conjunction with M. de Tedesco, elaborated a complete theory, the accuracy of which has been generally confirmed by subsequent experience.

The Palais de l'Electricité, which many of our readers had an opportunity of examining at the Paris Exposition of 1900, may be mentioned as a remarkable example of the Coignet system. That part of the structure which excited more attention than any other was the great alcove forming the principal façade. This alcove, having a height of 45 metres and a width of 25 metres over all, is supported upon a series of concrete-steel curved walls only 10 centimetres thick, carried by the reinforced construction of the galleries and staircases in the lower part of the building. The semi-circular wall forming the lower portion of the interior of the alcove is also only 10 centimetres thick, but is provided with vertical stiffening ribs 20 centimetres square. The upper portion of the alcove is composed of arched ribs covered by a concrete-steel slab 6 centimetres thick. The outer face consists of two concentric semi-circular arched ribs connected by bracing and faced with reinforced concrete. This bold piece of structural engineering, which is one of the few buildings still remaining to recall the last Paris Exposition, is deserving of examination by all who are interested in reinforced concrete design, but, for the purpose of this article, we prefer to illustrate two buildings of more familiar character. The first of these (Fig. 101) is the General Post Office at Oran, in Algeria, which is constructed almost entirely in concrete-steel, and the second (Fig. 102) is the Banque des Valeurs Industrielles, Rue de

Réaumur, Paris. In the latter building, owing to the desire of the architects not to deviate from accepted methods of design, only the columns, floors, and roofs are of concrete-steel, the walls being of stone and brick, and the two bottom floors of rolled steel joists with brick panels.

The distinctive feature of walls built on the Coignet system is that they consist of three parts—uprights, lintels, and panels. The uprights and lintels are of reinforced concrete, and are connected so as to form a skeleton frame very much resembling the steel framework adopted so largely by architects in the United States. The panels between the members of the reinforced concrete skeleton are usually of the same material, but brick, stone, or other filling may be employed at the option of the designer, and, if desirable, the exterior may be faced with stone, brick, or terra-cotta, very much as brick shells are faced with stone in this country. There are no special features in connexion with the foundations for walls of this type, the footings being of concrete, reinforced by longitudinal and transverse bars of steel.

Footings for columns are somewhat similar in design to the Hennebique footing illustrated by Fig. 39 in a previous series of articles.* The reinforcing bars are in two tiers near the ower surface of the concrete, the bars of the upper tier being placed transversely to those in the lower tier. The chief point of difference is that the Coignet footing is strengthened by four stiffening ribs projecting from the upper surface of the concrete and extending from the middle of the footing to, and parallel with, the sides of the rectangle.

The columns are usually of square cross section, reinforced by four vertical bars, one in each corner, and tied by horizontal hooping of thin round rods about 6 millimetres in diameter, the ends of which overlap and are firmly bound together by annealed iron wire. The horizontal hoops, or horizontal ties, are spaced about 10 centimetres apart measured vertically. Cylindrical columns are similarly constructed, and in every case provision is made for securely connecting the reinforcement of the columns with that of the floor beams.

The foregoing particulars are generally descriptive of the method of construction followed in the General Post Office at Oran, and, as the details of the beams, joists, and floors are practically the same as those in the Banque des Valeurs Industrielles in Paris, it is unnecessary to consider them separately.

From Fig. 102, it will be seen that the last-mentioned building comprises nine stories in all, including the basement and sub-basement. The reinforced concrete work commences at the first floor, and includes the interior columns, beams, floors, and the roof.

Fig. 103 gives a transverse and a longitudinal section of a floor joist, and part of the adjoining floor slab, which really constitutes the compression flange of the beam. The reinforcing bar in the tension area of the joist here represented is 2 centimetres in diameter, and the bar in the compression area has a diameter of 1·3 centimetres. The vertical stirrups, formed of round rods, are lapped round the horizontal bars, and are intended to resist shearing stresses. In this example, the floor slab is also reinforced by upper and lower bars perpendicular to the reinforcement of the joist and by transverse rods laid over the upper and lower bars for the purpose of distributing the stresses over these in a uniform manner. It will be observed that vertical stirrups are employed in the floor slab, as well as in the beam part of the construction. The points at which the various bars and rods cross are securely connected by a binding of annealed wire, and the whole of the reinforcement is firmly held together by the surrounding concrete. In this way a complete network is formed capable of resisting stress in every direction.

In some parts of the building where the spans were small, the floor slabs were made with single reinforcement. Fig. 104 includes transverse and longitudinal sections of a floor beam with two sets of double reinforcement, and of portions of the adjoining floor slab with single reinforcement. The construction of the beam here represented requires no explanation, being essentially similar to that of the joist illustrated in the previous drawing. It will be seen that the single bar shown in the cross section is raised so as to pass over the upper reinforcement of the beam, instead of being carried straight through. This arrangement is very desirable in floor slabs where only one bar is employed, for the reason that, in construction of this kind, when the concrete is monolithic, continuous girder action is always evidenced to some extent, and by bending up the ends of bars terminating in beams, or by bending up bars running across beams as in the present case, the requisite resistance is offered to tensile stress developed in those parts of the upper area lying between the abutment and the points of contrary flexure. The bars in the floor slab running parallel to the main reinforcement of the beam are also bent up at any places where they may have to cross floor joists. Floors of this type are employed for spans not exceeding 12 ft. and for loads of not more than 56 lb. per sq. ft.

Fig. 105 represents the beam and floor construction employed in parts of the building where the loads are more considerable. The sections here given show a beam with three sets of double reinforcement, and for the purpose of insuring even distribution of stress over these bars short transverse rods were fixed as indicated in the lower part of the cross section. The thickness of the floor slabs varies according to requirements from 5 centimetres to 20 centimetres.

All the roofing system of the building is in concrete-steel, designed in a manner practically the same as that followed in the case of the floor slabs. The flat top of the roof is supported in part by columns as shown in the section (Fig. 102), and to prevent the admission of moisture the whole of the roof was covered by a layer of waterproof material placed over the concrete.

In moulding the columns, beams, and floor slabs of this building, falseworks were employed generally similar to those previously illustrated. In the Coignet system, however, the beams are frequently moulded in advance in a shed upon the site of the works, or in the basement of the building in course of erection. Bolts are passed at intervals through the sides of the beam moulds, and are used for the attachment of longitudinal strips of timber one on each side, placed at a suitable height for supporting the temporary flooring upon which the reinforced panels are afterwards formed. The transverse reinforcement of the beams so moulded is allowed to project at each side so that it may afterwards be incorporated in the concrete of the floor slabs. After they have thoroughly hardened, the beams are hoisted into position, and, as they serve for the support of the falsework for the floor slabs, considerable expense and delay are obviated. It should be remarked, however, that when this method of construction is adopted, the resistance of the beams and floor slabs should be computed separately. The reason for this recommendation is to be found in the fact that it is difficult to insure a really satisfactory bond between old and new concrete, and, although both parts may be well tied together by the intersecting strands of the reinforcing network, it would be unwise to rely upon the establishment of continuous girder action throughout the construction.

One way of building hollow floors on the Coignet system is by moulding the beams and ceiling slabs together as beams and floor slabs are ordinarily made, the reinforcement of the ceiling plates running transversely to that of the beams. The tops of the beams are afterwards covered with a boarded flooring. This does not provide an airtight space between the ceiling and the floor covering, and from the

* The *Builder*, vol. lxxxv., p. 526.

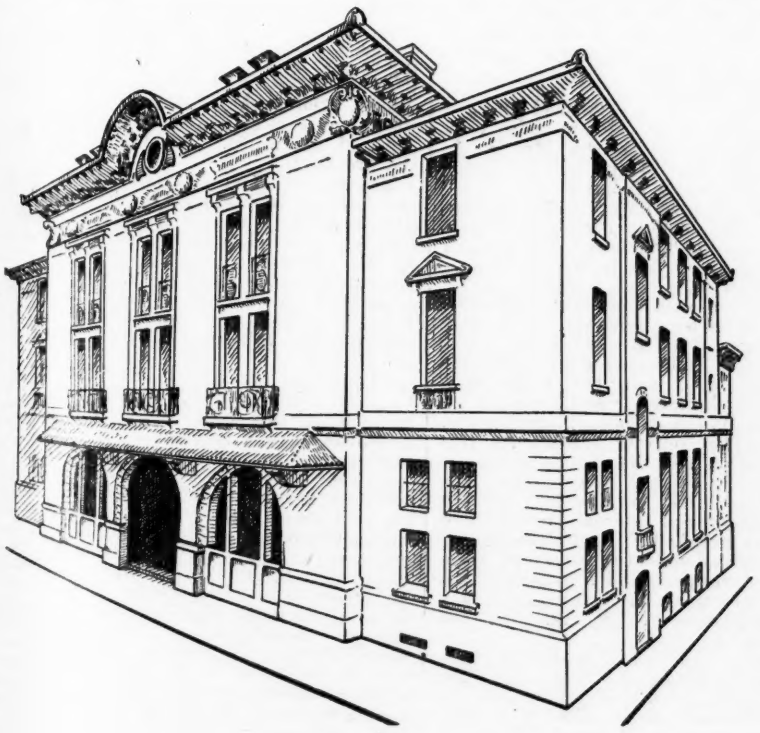


FIG. 101.

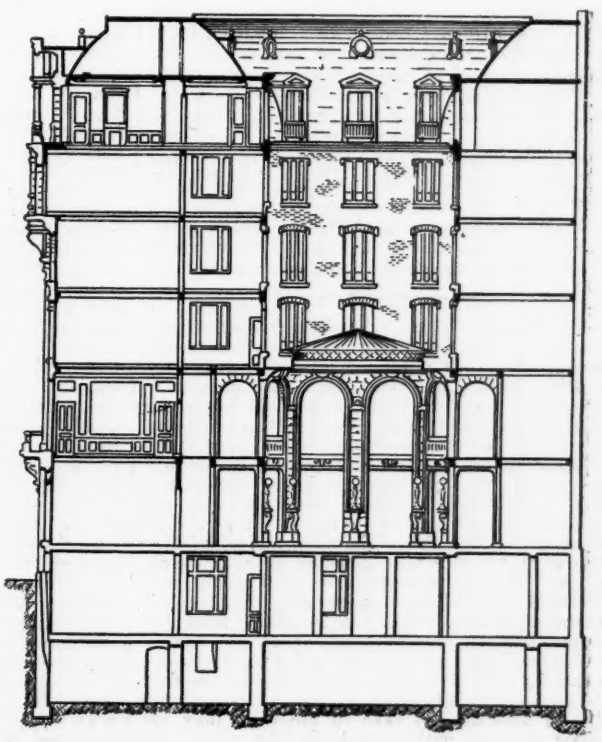


FIG. 102.

Illustrations to Student's Column.

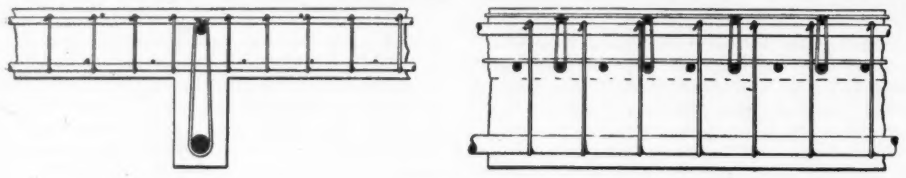


FIG. 103.

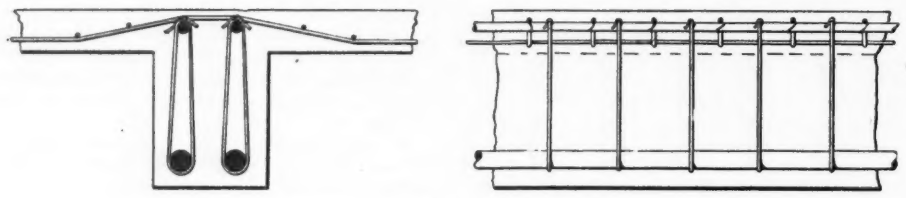


FIG. 104.

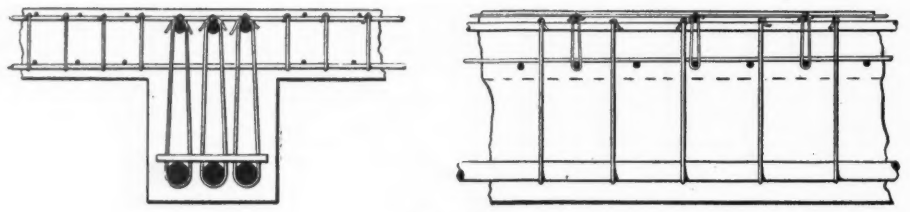


FIG. 105.

Illustrations to Student's Column.

standpoint of fire resistance is not to be recommended.

Another method is to make the ceiling slabs in advance, with rods projecting vertically for incorporation with the concrete of the beams. In this case the slabs form the bottom closing the beam moulds, but as the upper floor slabs cannot be moulded in position without abandoning the centring, the only economical procedure is to make the flooring of timber. A third method is to form the ceiling plate by fixing expanded metal or galvanising wire netting between the beams, afterwards plastering over the metal. The last mentioned is certainly the only one of the three that should be adopted in a building intended to be of the fire-resisting type.

Staircases on the Coignet system are formed by an inclined plane of concrete-steel with longitudinal and transverse reinforcing bars, the ends of the latter being long enough to enable them to be carried below the bottom bars, over the top bars, and down again nearly to the bottom of stringers, also of concrete-steel, fixed at each side. The treads are moulded on the upper surface of the inclined plane.

From the foregoing particulars it will be seen that no methods of very striking novelty are embodied in the system described. Nevertheless, it is one that may be relied upon as the basis for the satisfactory design and erection of buildings such as those mentioned and illustrated in this article, as well as of the numerous other types of constructional work to which it has been applied on the Continent and elsewhere.

THE ZAMBEX CAMERA.—We have had an opportunity of examining the "Zambex" camera, recently brought out by Messrs. Beck, and of putting it to a practical test. This camera is adapted for the use of flat films which may be changed in daylight, the method adopted being to pack the films in a peculiarly-shaped envelope, each film having a separate compartment; the envelope being made of a very tough needle paper. The resulting advantage is that any ordinary cut films may be used, and when the skeleton envelope is filled the photographer may dispense with the dark-room. The camera itself is remarkably well finished and extremely handy. When we mention that the camera is fitted with the most modern Anastigmat, that it has a "Cornex" focussing index, and a most efficient shutter, we may safely say that the amateur is here provided with the best of everything. Those who do not care to use films may use glass plates with equal facility, and the camera is made both folding and box form, either for the hand or for the pocket. We are convinced that the makers will find this system more successful than their earlier type, the "Frena."

GENERAL BUILDING NEWS.

ST. NICHOLAS CHURCH, BOSTON, LINCOLNSHIRE.—The parishioners of Boston have decided to proceed after Easter with the work of enlarging the Church of St. Nicholas, in the Skirbeck quarter. The cost of the undertaking will amount to 3,000*l.*, and plans, prepared by Mr. G. F. Bodley, R.A., have been adopted. They include a new chancel, with organ chamber, north and south porches, and the restoration of the tower, but it has been decided first of all to rebuild the destroyed portion of the north aisle, and to erect a vestry and heating-chamber.

CHURCH, HOWEY, RADNORSHIRE.—A new church was recently dedicated at Howey, in the parish of Disserth, Radnorshire. The dressings are in terra-cotta by J. C. Edwards, Ruabon, the red steps are the old Radnor Company's patent material, and the floor is in wood blocks, oak in the chancel, by Geary, Walker, & Co. The roof is exposed timber work in pitch-pine, left in its natural colour from the plane, and the roofs are covered with tiles. The church consists of a nave, chancel, vestry, and south porch, and seats 100 worshippers. The division of chancel and nave is marked by a roof truss brought rather low down and finished on ogee brackets, resting on stone columns, with caps and bases. The contractor was Mr. S. A. Bounds, of Llandrindod Wells, and the architect was Mr. R. Wellings Thomas.

UNITED METHODIST FREE CHURCH AND SCHOOLS, SEVEN KINGS.—The opening ceremony of this building took place on Thursday. The portion of the building which has been erected embraces the church nave and temporary apse, also a square tower, with open traceried parapet, and surmounted by a spire and finial vane, rising to a height of 91 ft., also main schoolroom, 51 ft. by 40 ft., together with superintendents' room, etc., and the usual conveniences. The building was designed by Messrs. George Baines & Son, Clement's-inn, Strand, W.C. The contract amount for this portion was 3,488*l.*, and the church accommodates 400 persons in a mixed congregation. The facings are of red brick, the dressings in Bath stone. The seating and internal joinery is of fumed oak, wax polished. The building is intended to be extended in the future by transepts, apse, and vestries, and a corresponding addition under same to the schools, giving a future accommodation of 700 adults in the completed church.

CONGREGATIONAL CHURCH, SKELMERSDALE.—The new Foster Memorial Church at Skelmersdale is Early Gothic in style, and the plan comprises a nave 30 ft. wide, with shallow side transepts, a small chancel, which is adapted for the choir, but which will be occupied for the present by the minister's rostrum, an organ chamber on the left side of the chancel, and vestries on the right. The entrance doors on the main front open into a vestibule, from which access is gained to the two principal aisles. There is also a staircase leading from the vestibule to a gallery across the end of the church. At the eastern corner there is a tower with a slated spire about 56 ft. high. The chancel has seating accommodation for about 350. The structure is built of bricks, faced outside with Huncoat plastic bricks, relieved with stone dressings. The main roof is carried upon three pitch-pine hammer beam principals, and is covered with blue slates. The windows are glazed with amber-tinted glass in lead lights, and the church is heated with hot water. The whole of the interior fittings, including seating, gallery front, rostrum, etc., are of varnished pitch-pine, and the flooring along the aisles is of wood blocks. The church has been designed, and the work supervised, by Mr. T. H. Hodge, architect, of Southport, and the contractors are Messrs. A. K. Irving & Sons, also of Southport. The heating apparatus has been installed by Mr. Thos. Ormston, of Southport.

ST. JOHN'S CHAPEL, RIPON.—The Bishop of Ripon dedicated, on the 26th ult., an extension that has just been completed in connexion with St. John's Chapel, Bondgate, Ripon. The work, which has been carried out from the designs of Mr. Hodgson Fowler, of Durham, architect, includes the addition of a vestry on the north side, which may also be used for bible classes, and also an organ chamber. Mr. J. H. Coldbeck, of Ripon, has had the contract for the work.

TAVISTOCK-STREET, COVENT GARDEN.—New premises are being erected on the south side of Tavistock-street for Country Life, Ltd., a company which has been formed to acquire *Country Life*, *The Garden*, and certain other allied publications. The premises are held under an agreement for lease, from the Duke of Bedford, for a term of eighty years at an annual ground rent of 600*l.* The buildings are planned and designed by Mr. E. L. Lutyens, and Messrs. William Cubitt & Co. are the contractors; the estimated cost amounts to 16,000*l.*

POST-OFFICE, HANLEY.—A new post-office is in course of erection at Hanley. The building will comprise a basement and three stories, and will cost about 10,000*l.* The basement will be used mostly for stores and heating apparatus. On the ground floor is situated the public office, the extent of which will be 43 ft. by 27 ft. The public counter will run the whole length of the office, and will be about 39 ft. in length. In addition to this, there will be another office entered by the door on the right, for use as an extraordinary public office at times of exceptional pressure. The floor of the public office will be of terazzo paving. The sorting office, also situated on the ground floor, will be about 56 ft. by 27 ft. in extent, and the other rooms on this floor include retiring-rooms for the superintendent, the postmen, and the sorters, and cycle storage for the boy messengers. There will be two entrances for vehicles, one at the back from Old Hall-street, and one at the right-hand corner of the building in Tontine-street. The first floor will be given up to the engineer and his clerk, storage space, retiring-rooms, and the battery-room. The top floor consists of telegraph and telephone rooms. The work is being carried out under the supervision of Mr. C. J. Bassett, the local clerk of the works. Mr. John Rutherford is the architect.

TEMPERANCE HALL, YEADON, YORKSHIRE.—A new hall has been erected by the Yeadon Temperance Society and Band of Hope. The new building, the plans for which were prepared by Mr. Harold Chippindale, of Guiseley, is English Renaissance in style, and it occupies a position on the Green, to which it has a frontage of 51 ft., the length of the hall, which runs parallel with the public causeway, being 101 ft. 9 in.

GYMNASIUM AND BATHS, DUNFERMLINE.—The Carnegie Dunfermline Trust Baths in Pilmuir-street have just been completed. The new buildings have a frontage of 260 ft., and the total area of ground occupied is 3,300 sq. yds., over which the plan is set out in three main attached groups—namely, the front, comprising entrance hall, reading and committee rooms and offices, billiard-room, slipper baths, and complete suite of Turkish baths; second, the pond hall, and relative accommodation for machinery and filter, engine-room, laundry, accumulator-room, etc.; and third, the gymnasium, dressing-rooms, instructor's rooms, superintendent's residence. The architect was Mr. Hippolyte J. Blanc. Professor Baily has acted as consulting engineer, and Mr. Henderson has acted as clerk of works. The leading contractors were:—Builders, James Stewart & Sons, Dunfermline; joiners, Kisnear, Moodie, & Co., Edinburgh; plumbers, James Inglis & Son, Dunfermline; plasterer, P. F. Cavanagh, Edinburgh; slater, John Robertson, Dunfermline; ironwork, Redpath,

Brown, & Co., Edinburgh, and Wilson & Son, Dunfermline; tile floors, Allan & Sons, Edinburgh; wall tiles, Minton, Hollins, & Co., Stoke-on-Trent; H. & R. Johnson, Coldridge; Carter & Co., Poole; electrical engineers, Middleton & Townsend, Edinburgh and London; heating engineers, D. Lowe & Sons, Edinburgh; glaziers, George Lindsay & Co., Edinburgh; painters, Don & Marshall, Dunfermline; bells and blinds, W. Brydon & Sons, Edinburgh; billiard tables, G. & T. Scott, Edinburgh; grates, Kelly & Son, Edinburgh; electric fitings, Singer & Co., Frome, Somerset; bath fittings, etc., Shanks & Co., Barrhead; gymnastic apparatus, Meins, Glasgow; glazed bricks, J. & M. Craig, Lilliehill (per W. Christie).

CO-OPERATIVE BUILDINGS, WOBURN SANDS.—New premises for the Woburn Sands Co-operative Society have just been opened. The premises occupy a position in the main street. The architect was Mr. W. B. Stonebridge, of Woburn Sands, and the builder, Mr. C. Sinfield, Aspley Guise.

HIPPODROME, IPSWICH.—The new Ipswich Hippodrome in St. Nicholas-street has just been opened. The building work was carried out by Mr. Thomas Parkington from designs prepared by Mr. Frank Matcham, architect. The cost of the work is about 15,000*l.*

NEW BUILDINGS, NEW BROAD-STREET.—The property, comprising Nos. 54-62, New Broad-street, E.C., occupying practically the whole of the south side of that thoroughfare, which was recently offered by auction at the Mart but withdrawn (the reserve not having been reached), has since been let privately by the Corporation of the City of London, and, it is stated, the old buildings will be demolished forthwith and new office buildings and banking premises erected from designs of Mr. Paul Hoffmann, architect.

STAINED GLASS AND DECORATION.

MEMORIAL SCREEN, TORQUAY.—A rood screen is about to be erected in Ilsham parish church, Torquay, in memory of the late Mr. J. Snelgrove. It has been designed by Mr. C. Foster Hayward, architect, London. The work is being executed by Messrs. Harry Hems & Sons, Exeter.

APPOINTMENTS

LINCOLN'S INN.—Mr. H. William Simpson has been appointed Surveyor to the Honourable Society of Lincoln's Inn, *vice* Mr. Dennett Heber Barry, who has resigned the appointment.

BRITISH MUSEUM.—At their meeting on March 27 the Electing Trustees elected Viscount Dillon, Past-President of the Society of Antiquaries, a Trustee of the British Museum.

LEEDS.—The Waterworks Committee of the Leeds Corporation, on the 30th ult., selected an engineer, and accepted a tender for the construction of the Colsterdale reservoir. The Committee decided to recommend the Council to appoint Mr. Charles George Henzell, M.Inst.C.E., of Newcastle-on-Tyne, to the position of waterworks engineer of the city. For the appointment, which is a new one in Leeds, as an independent position, and the salary attached to which is 1,000*l.* a year, with office and staff, there were originally fifty-eight applicants. These were reduced to nine, and a few days afterwards the nine were reduced to the following:—E. F. McCullough, waterworks engineer, Belfast; C. J. Batley, waterworks engineer, Oldham; W. Ratcliffe Barnett, engineer in connexion with the Thirlmere water scheme, Manchester; Charles G. Henzell, resident engineer at the Catcleugh Reservoir, Newcastle. Mr. Henzell, who is 42 years of age, is at present engaged in directing, under Messrs. T. & C. Hawksley, the construction of a reservoir for Newcastle and Gateshead at Catcleugh, near Otterburn, in Northumberland. At the same meeting the Committee agreed to recommend the Council to accept the tender of Messrs. R. McAlpine & Co., of Glasgow, for the Colsterdale reservoir, at an estimated cost of 297,000*l.*

SANITARY AND ENGINEERING NEWS.

DRAINAGE PLANS.—The Paddington Borough Council, on Tuesday, appointed Alderman H. H. Collins, Chairman of the Public Health Committee, and Mr. H. G. Handover, the Vice-chairman, to represent the Council on the deputation which the Royal Institute of British Architects is organising to wait upon the London County Council to ask that body to modify, in certain directions, the by-laws as to the deposition of plans with regard to drainage work, in view of the present unnecessary cost and trouble involved in complying with said by-laws. The Westminster City Council is to be represented on the deputation by Alderman Emden and the City Engineer.

BRIDGE, EXETER.—The Mayor of Exeter opened, on the 29th ult., the new steel bridge which has been thrown across the Exe. The new structure provides an approach to the city at the western end, is 150 ft. span and is 50 ft. wide between the parapets. It has been built upon the three-hinged principle, and the rise is one in thirteen. The abutments are all faced with Devonshire granite from Dartmoor. The paving has been supplied by the Patent Victoria Stone Company, London. The engineers are Sir John Wolfe Barry and Mr. C. E. Brereton, with Mr. F. G. A. Pinckney as resident engineer. Messrs. Heenan & Froude, of Manchester, were the contractors for the steelwork, and Mr. Tom R. Suggett has acted as contractors' engineer.

DRAINAGE SCHEME, HOWDEN, YORKSHIRE.—On the 28th ult. an inquiry was held on behalf of the Local Government Board by Mr. E. A. Sandford Fawcett, M.Inst.C.E., relating to an application of the Howden Rural District Council for sanction to borrow 4,000*l.* for a sewage scheme for the parish. A sewage scheme was carried out about twenty years ago, but has been of little value. The Clerk of the Council (Mr. Henry Green) stated that recently, out of seven schemes which were submitted in competition, the Council selected that designed by Mr. Arthur Shaw, engineer, of Messrs. Shaw & Powls, of Nelson.

SEWERAGE WORKS, IVYBRIDGE, DEVON.—These works, which have just been opened, comprise about 1,100 yds. of new intercepting and outfall sewers, with the necessary manholes, etc., forming, together with the previously existing sewers, a complete system for the whole town, purification works for the sewage of 2,000 people, together with storm water up to a total of 120,000 gallons per day, and irrigation works for a further 120,000 gallons per day of storm water. The new sewers, which are in the western part of the town, are laid with stoneware pipes, fitted with the double-seal joint recently introduced by Messrs. Freeman Hines. The works consist of two grit chambers, two septic tanks, and eight aërating bacterial filters, with smaller chambers. The tanks, which are covered with concrete arches and a layer of soil, are each 70 ft. long by 12 ft. wide, and 7 ft. in average depth below the springing of the roof arches. The filters, which are worked on the contact system, are each 28 ft. long by 22 ft. wide, broken to gauge and freed of dust, the particles of this material forming a resting-place for the nitrifying bacteria. They are arranged in two groups of four, the working of each group being controlled by the Septic Tank Company's automatic alternating gear. The work has been carried out by Mr. G. R. Andrews, of Ivybridge, assisted by his sons, and has been supervised by Mr. H. V. Smith, and subsequently by Mr. Anthony Etheridge, as clerks of works. The amount of the contract was 2,850*l.* 16s. 1d., but, during the progress of the work, some additional sewers were ordered to take the place of old ones, which were found to be defective.

ACTON SEWAGE BILL, 1905.—At Tuesday's meeting of the London County Council, the Parliamentary Committee brought up the following report:—The Acton Sewage Bill, promoted by the Acton Urban District Council, seeks to authorise the District Council to construct and maintain sewerage and sewage outfall works, and to make further provision for the admission of sewage into the metropolitan main drainage system from a portion of the urban district of Acton. The preamble recites that, owing to the large increase in houses and population in Acton, the present sewage works and outfall which the Acton Local Board (now the Urban District Council) were authorised to construct in 1881, for the purpose of taking the drainage of part of the district, have become inadequate; that it is expedient that the District Council should be authorised to construct a new sewer and outfall; that prior to 1855 the drainage of that part of the district, other than the part above mentioned, entered the Stamford Brook sewer, which, by Metropolis Management Act, 1855, was vested in the Metropolitan Board of Works, and was by that Board connected with the metropolitan main drainage system; that provision was made by the London County Council (Acton) Sewage Act, 1898, for the payment of certain sums by the District Council to the London County Council in respect of the future use by the District Council of the metropolitan main drainage system; and that, owing to the before-mentioned rapid increase of population, the London County Council should be required and authorised to receive and dispose of sewage of the district which it is not now required and authorised to receive; but that the east and west branches of the Stamford Brook sewer should be relieved of flood water from the district, which should be discharged into the Thames as proposed in the Bill. The Council at the present time deals with a certain portion of the sewage of Acton, and the matter is governed by the London County Council (Acton) Sewage Act, 1898. The features of this case are not such as would, in our opinion, form any sufficient reason for allowing the District Council to compel the Council to receive further sewage from Acton into the main drainage system of London. Consequently, we gave instructions for the most strenuous opposition to be offered to the proposal on the grounds that, if sanctioned by Parliament, it would be fraught with the greatest danger to London. The proceedings on the Bill were opened on Thursday, March 23, before a Select Committee of the House of Commons, presided over by Mr. Agg-Gardner. . . . After hearing counsel's speech, which was followed by cross-examination, the Committee then decided as follows:—"The Committee, in passing the preamble, state—(i.) that, in view of the facts of this case, it is their opinion that this decision does not prejudice the general principle raised by the London County Council, namely, that the County Council should not be compelled to take, against their will, the sewage of outside bodies; (ii.) that a clause giving a right to compensation to inhabitants of Chiswick who might be injuriously affected through the bursting of sewers from causes other than that of negligence shall be inserted." We regret that this decision should have been arrived at, and, in the circumstances, we have seen no alternative but to take all necessary steps to oppose the Bill in its subsequent stages.

FOREIGN.

FRANCE.—Parliament has adopted the scheme for a railway between Monmartre and the Gare Mont-Parnasse (Paris), to be carried by means of the tube system invented by M. Berlièr.——A committee, under the Presidency of MM. Rodin and Carolus-Duran, has been formed to erect a monument in memory of the eminent sculptor Carpeaux. The execution of the monument is to be entrusted to M. Fugel, who is a pupil of Carpeaux. A committee has also been formed for the erection of a monument to Vollon, the eminent Still-Life artist.——A monument to de Musset is to be erected at Neuilly-sur-Seine, the statue for which has been executed by M. Granet.——Parliament has voted in favour of the establishment of a direct line of railway to Biarritz, and the suppression of the present terminus "de la Negresse," situated at some distance from the town.——The municipal theatre at Saint-Dizier is to be rebuilt from the designs of M. Ferrant, of Paris.——A new hospital is to be built at Ancenis (Loire Inférieure) at an estimated cost of 378,000 francs.——The seventy-second Congress of the "Société Française d'Archéologie" will be held at Beauvais from the 20th to the 28th of June.——M. Leray, architect, of Nantes, has been commissioned to rebuild the Hôtel de Ville of Redon, at a cost of 140,000 francs.——The Municipality of Cahors intend to replace the old bridge by a new steel one in the same position.——The Chamber of Commerce of Nancy have instructed their architects, MM. Toussaint & Marchal, to carry out a building which is to accommodate the whole of the services of the Chamber of Commerce and the Bourse.——A monument in memory of M. Ernest Coquart, the architect, who died in 1902, has been erected at the Ecole des Beaux-Arts. It is the joint design of M. Bernier (architect) and M. Marqueste (sculptor).——The death is announced, at age of 72, of M. Gustave Blot, who won the Grand Prix de Rome in 1855, and who, since 1890, was director of the atelier of engraving in the Institute of Fine-Arts at Antwerp.

GERMANY.—The "Wartenburg" House, in Charlottenburg, built in 1823 by Schinkel, is to be pulled down.——The exhibition buildings at Lüttich have been built from plans by Herr Jaffé, of Berlin, and the decorative work was executed by the sculptor, Herr Robert Schirmer.——The old "Kurland" Palace, at Dresden, is to be utilised as an Art Gallery by the Dresden Society of Artists.——The restoration of the old frescoes in the Town Hall at Nuremberg has been entrusted to Professor R. von Seitz.

SWITZERLAND.—The new schools at St. Gallen are to be built from plans by MM. Curjel & Moser, of Karlsruhe, to whom was awarded the second premium in the competition for designs; the building will cost about 920,000 francs.——The plans by Herr Truninger have been chosen for the school at Mogelsberg, which is to be erected at a cost of 51,500 francs.——The new bank at Basle is to be built from plans by the architects, H. Weideli & R. Bischoff, of Karlsruhe.

AUSTRIA.—The memorial to the Grand Duke Karl Ludwig, which is to be erected in

Vienna, will soon be completed; the work, which is being executed by the sculptor, Herr E. Hofmann v. Aspernburg, symbolises Science and Art, and Peace and Unity. An obelisk, standing on a marble pedestal, is surmounted by an eagle with outstretched wings; on the front of the obelisk appears a medallion portrait in relief of the Grand Duke, and on the other side is a tablet bearing an inscription; on either side of the pedestal is a female figure, Science (standing), and Art (kneeling), who are offering homage to the Grand Duke.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—The partnership heretofore subsisting between Messrs. Essex, Nicol, & Goodman, architects (Birmingham), has been dissolved by mutual consent. In future Mr. Oliver Essex, F.R.I.B.A., and Mr. John Goodman will practise as Messrs. Essex & Goodman, at 21, Waterloo-street, Birmingham, and Mr. J. Coulson Nicol, A.R.I.B.A., will practise with his son, Mr. G. Salway Nicol, A.R.I.B.A., as Messrs. Nicol & Nicol, at King's Court, 117, Colmore-row, Birmingham. Both firms will have a London office at 25, Bedford-row, W.C. All moneys due to or from the original firm will be received or paid at Colmore House, 21, Waterloo-street, Birmingham, or at King's Court, 117, Colmore-row, Birmingham.

ROYAL ORTHOPÆDIC HOSPITAL.—Consequently upon the amalgamation with the National Orthopædic Hospital, in Great Portland-street, W., the site of the buildings in Oxford-street and of No. 15, Hanover-square has been cleared for the erection of a block of offices and residential flats designed by Mr. Paul Hoffmann. A charter is being prepared for the combination of the two institutions under the style of the Royal National Orthopædic Hospital, and a site adjoining the present premises in Great Portland-street has been obtained for the erection of additional wards and accommodation for the staff. A feature of the administration is the instruction of the crippled children in various useful handicrafts in so far as their capabilities will permit, and the school has lately passed to the Education Committee of the London County Council, who employ a teacher in one of the wards.

RULES AFFECTING ARTISTS AND STUDENTS IN ITALY.—Mr. Neville Rolfe, British Consul-General in Southern Italy, sends a word of warning through the Foreign Office to the effect that the new regulations for the admission of artists and students gratis to the Italian galleries and excavations are very much more stringent than those hitherto in force. The artists and students should now submit their credentials to the Italian Ambassador in London, and on his certificate a pass will be granted. Until lately the certificate of the artist's Consul was accepted. Now, unless the artist has provided himself with a certificate from the Italian Ambassador in his native country he must make his application to the Ambassador accredited to the Court at Rome, who must first judge whether the applicant belongs to a "recognised academy," and if, in his judgment, he does so, forward his application to the Minister of Education, who eventually sends a pass to the Embassy, whence it is usually forwarded to the Consulate of the city from which the application is made, and then by the Consul transmitted to the applicant. The pass, when obtained, permits the bearer to measure, sketch, and photograph, and to go in and out of the gallery or excavation free as often as he pleases. If he wishes to copy a picture he must apply to the Director of the gallery in which it is exhibited, who will inform him under what conditions he may work. Amateurs can obtain permission to photograph on application to the Director of the gallery or excavation in question. The application must be on stamped paper of 60c., which can be procured of any tobacconist in Italy. Mr. Rolfe adds that nothing of further importance has been found at Pompeii during the past year. The excavations are progressing regularly, but not with any startling rapidity, nor is it desirable that great haste should be used, the objects still buried being perfectly safe where they are, and destined to give pleasure and instruction to succeeding generations.

BRINDLEY'S HOUSE AT TUNSTALL.—Adverting to our recent review, p. 149 *ante*, of a volume of the re-issue of Samuel Smiles's "Lives of the Engineers" which contains the memoir of Brindley, we may mention that the Guardians of Wolstanton and Burslem Union have recently rented Turnhurst Hall, at Tunstall, for the reception of the aged poor, in supplement of the workhouse at Chell, which does not provide the accommodation required. Turnhurst Hall was at one time the home of Brindley, and in the garden is a model of part of the works of the Bridgewater Canal, with the construction of which his fame is so closely associated.

NO. 1, CORNHILL.—A few days ago the Liverpool and London and Globe Insurance Company moved into their new offices, erected on the former site, at the corner of Lombard-street and Cornhill, after plans and designs by Mr. J. MacVicar Anderson, the contractors being Messrs. Colls & Sons. The former premises were built at the time of the laying out, by William Mountague, the City Architect, of King William-street, in 1824-30, when were pulled down Nos. 1-10, Lombard-street, south side, together with Dove-court and Little Lombard-street, and some of the opposite houses in Lombard-street, and at the angle with Cornhill. Thus, the roadway immediately in front of the new premises marks the site of the original No. 1, Cornhill, occupied by Thomas Guy, publisher and bookseller, the benefactor of St. Thomas's and Guy's hospitals, and afterwards by Pidding's lottery office, at what was known as the "Lucky Corner."

METROPOLITAN WATER BOARD.—At their meeting on March 31 the Board agreed to introduce a Bill in the course of next Session of Parliament providing for uniform scales of charges applicable throughout the limits of supply. For purposes of engineering administration, the Board have divided that area into five districts:—(1) The New River District, to consist of the present area so-named, and to include Tottenham and Enfield; (2) the Eastern District, to consist of the present East London District; (3) the Southern District, to consist of the present Southwark and Vauxhall and Lambeth districts; (4) the Western District, to consist of the present Chelsea, Grand Junction, and West Middlesex districts; and (5) the Kent District, as now; subject to a revision of the boundaries in each instance if found advisable. They also appointed Mr. E. Collins, the Distributing Engineer of the New River Company, to be Engineer of that District, at a salary of 1,500*l*.-1,750*l*.; Mr. H. F. Rutter, Engineer of the West Middlesex District, to be Western District Engineer, at a salary of 1,200*l*.-1,500*l*.; and Mr. W. Blackburn, Deputy-Engineer of the East London District, to be Eastern District Engineer, at a commencing salary of 800*l*.

THE LABOUR MARKET IN THE COLONIES.—The April Circulars of the Emigrants' Information Office state that there is a good demand for farm labourers in *Canada*. The demand for mechanics is not so great; but at this season of the year skilled men in the building and metal trades should have little difficulty in procuring good employment. In *New South Wales* there is little or no demand for more mechanics, miners, farm labourers, or station hands. In *Victoria* there is no demand for more labour at Melbourne, and very little in country districts, except for farm labourers. In *South Australia*, at Adelaide, the labour market is overcrowded, and, speaking generally, no working man is advised to go to South Australia unless he is specially skilled in his trade, or has friends to go to, or has sufficient money to live on at first. There is no demand for miners. A report from Brisbane, in *Queensland*, states that there is no demand for workers of any description at present, although good openings exist for experienced farmers to take up selections on favourable terms. In *Western Australia* there is little demand for more mechanics or labourers from this country unless they can keep themselves for a while. In *Tasmania* miners and mechanics at Zeehan, Queenstown, and Gormanston, on the west coast, and in the surrounding districts, are fairly well employed; but the local supply is, as a rule, sufficient. In other parts of the State there is no general demand for more mechanics, but there is an opening for them if they have sufficient money to keep themselves at first. The supply of farm labourers is not quite sufficient, and skilled men can get work. Reduced passages to *New Zealand* are given to emigrants with a little capital. Work has been, generally speaking, plentiful during the last few weeks, as is usual in the summer season. Men in the building, and, to a less extent, the engineering trades, coach-builders, saddlers, plumbers, blacksmiths, saw millers, flax millers, wheelwrights, and others have been well employed, except at Christchurch and one or two other places. No one is allowed to land in *Cape Colony* unless he has secured employment or possesses 20*l*. on arrival. Considerable numbers of persons are out of work at Cape Town, Kimberley, Port Elizabeth, and elsewhere, so that emigrants are warned against going to Cape Colony at the present time. In *Natal* labour is plentiful both in Durban and Maritzburg, and some carpenters and bricklayers, and especially unskilled workmen and indifferent mechanics, are out of employment. No one, therefore, should go out in search of work unless he obtains a nominated passage through friends in the colony. No one may enter the *Transvaal* without a permit, which should be applied for at least a week before sailing. Though the output of gold is very large, and more white men are being employed about the mines than was the case last year, and though the building trade has slightly improved of late, the supply of labour at Johannesburg is still considerably in excess of the demand. No one may enter the *Orange River Colony* without a permit. There is no improvement in the demand for labour, and persons are warned against going to the Colony at the present time in search of work.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE.—At this college (204, George-street, Glasgow), on Wednesday, the 29th ult., the students and staff of the Architectural Department met to express their feelings of goodwill towards Professor Gourlay, B.Sc., A.R.I.B.A., on the occasion of his approaching marriage. Mr. Vernon Constable occupied the chair, and was supported by Mr. John B. K. McTaggart, who presented the Professor with a handsome combined bookcase and curio cabinet, bearing a suitable inscription.

IMPROVEMENTS, BRIGHOUSE.—A bridge and street improvement is now being carried out in Huddersfield-road, Brighouse. For some years the inadequacy of the bridge spanning the Calder at this point has been felt, and contracts, amounting to about 3,000*l*., have just been accepted for the widening of the bridge and the improvement of the gradient and roadway. Mr. S. S. Heywood, the Borough Engineer, has prepared the plans and is supervising the work.

A LARGE PIECE OF STONE QUARRYING.—An interesting piece of work was carried out in the Island of Portland on the 25th ult. in the Kingbarrow Quarries of the Bath Stone Firms. From these quarries the stone has been excavated for the erection of the new Government buildings at Whitehall and the new War Office. What is known locally as a "big ream" was most successfully carried out. This phrase expresses the cleavage method adopted by the quarrymen in splitting the rock and wrenching it from its natural bed as it stands intact. The process adopted was as follows:—About forty "pits" were scored in the top of the rock, ranging from 18 in. to 24 in. in length, and into each of these were inserted two "pigs" of iron. Throughout the whole length of the "ream" about 170 large iron wedges were firmly driven between the "pigs" of iron. As soon as all was in readiness, forty-two men, using sledges from 12 lb. to 14 lb. each in weight, commenced the "battering assault." Striking simultaneously, one man to four wedges, they soon had the satisfaction of seeing the first signs of success in the shape of a very faint crack along the surface. Continuing their exertions with occasional pauses to reset wedges, etc., they eventually severed the huge rock from its hold after a task of four and a half hours. The measurement of the piece was 106 ft. long by 20 ft. wide by 12 ft. deep, and it is computed to contain 1,600 tons. This is believed to be the largest "ream off" in the history of quarrying operations in the Island of Portland.

JUNIOR ARMY AND NAVY CLUB, ST. JAMES'S.—The premises recently vacated by the Junior Army and Navy Club at the corner, south, of St. James's and King streets were withdrawn at 29,000*l*. from sale at auction on March 30. The property is held on a lease direct from the Crown for a term of which fifty-two years are unexpired. It covers an area of 7,685 ft. superficial, and has frontages of 48 ft. to St. James's-street and 153 ft. to King-street. The house was built for John Crockford, who kept the noted gaming-house, after Sir James Pennethorne's plans and designs, in 1832, as the St. James's Bazaar, with a saloon 100 ft. by 40 ft. Wyatt Papworth adapted the premises for the Junior Army and Navy Club in 1882-3, when he remodelled the front with bay-windows in the lower story, and added a curb roof to the return front in King-street.

CAPITAL AND LABOUR.

BUILDING TRADE DISPUTE AT SOUTH SHIELDS.—Over 200 bricklayers, plasterers, and stonemasons have been thrown out of work at South Shields through a dispute. Months ago the employers proposed to the men that they should submit to a reduction of wages of 1d. per hour, that, in winter time, they should not start before breakfast time, and that there should be a revision of rules. These proposals the men refused to accept, and, in consequence, the masters gave them three months' notice to terminate their employment. No arrangement was arrived at, and the notices expired. An offer was made by the masters to extend the notices for a month, the men to continue working under the old rules and conditions meanwhile, with the view of coming to a settlement,

but the men declined to accept the extension of time, and are now, therefore, out of work. The reason for the action of the masters is the depressed state of the building trade. Should the dispute continue, the number of men out of work will, in a short time, be increased, as other branches of the trade will be affected. The employers are advertising for men to take the places of those who have left their employment.

EDINBURGH JOINERS AND THEIR WAGES.—At a meeting of the Edinburgh, Leith, and District Building Employers' and Allied Trades' Association, held in the Building Trades' Exchange, 26, George-street, Edinburgh, on the 4th inst., a letter was read from the secretary of the Operative Joiners' Societies, in which it was stated that, at a meeting of both of the operative joiners' societies, held on March 30, the two proposals by the Masters' Association as to a reduction in wages and a change in the time of the working agreement were unanimously rejected, and that their Societies were to abide by the present code of working rules and regulations. It was unanimously agreed at the meeting on the 4th inst. to adopt the recommendation of the delegates who met with the operatives at the conference of March 24, and that notice be sent to the operatives that the by-laws would only be signed for another year on condition that the time of the agreement be changed from April 15 to July 1, and also that there should be a reduction of ½d. per hour (9d. to 8½d.), the reduction of wages to take effect from and after July 1.

Legal.

ACTION BY ARCHITECTS FOR FEES.

THE case of Runtz & Ford *v.* Baker came before Mr. Justice Wills and a special jury in the King's Bench Division on the 29th and 30th ult—an action by the plaintiffs to recover from the defendant the sum they alleged to be due for the preparation of certain plans. Defendant, by his defence, said that the contract had not been fulfilled, and he counterclaimed for damages for alleged delay.

Mr. Danckwerts, K.C., and Mr. Ernest Pollock appeared for the plaintiffs, and Mr. H. F. Dickens, K.C., and Mr. F. Watt for the defendant.

Mr. Danckwerts, in opening the case, said the plaintiffs were Messrs. E. Runtz & Ford, practising at Walbrook, E.C., who, amongst other works executed by them, had designed the new Gaiety Theatre in the Strand. Defendant and his wife were the owners of a building estate at East Finchley, the Church Fields Estate. Mr. Runtz, the senior member of the firm, was, in his younger days, a member of an athletic club to which the defendant also belonged, and in that way they knew each other. Defendant, who had this estate, employed the plaintiffs to lay it out for the purposes of building, and that work was completed about April, 1902. About the middle of that month the defendant and Mr. Runtz met, and matters were settled up in connexion with that job. Upon that occasion the matter was mooted of building certain houses upon certain portions of the estate. The question of what buildings should be erected interested both parties throughout. Both had ideas of suburban buildings and improvements that might be made, and the idea was that some buildings should be erected of a superior or better character than the usual run of suburban dwellings. Accordingly, there was, about April 22, a meeting, and it was agreed that the piece of land in question should be dealt with first. It was found that five pairs of semi-detached houses could be erected on the site. Defendant had an idea to build a style of house that he had seen at Muswell-hill. After discussion between Mr. Runtz and the defendant, it was agreed that the plaintiffs would not charge full fees for their work, but would do the whole thing for an inclusive free of 275*l.*, and for this they were to prepare plans and plot out the ground and superintend the work until completion. Messrs. J. S. Lee & Sons were engaged by the plaintiffs as the quantity surveyors. Defendant desired that the houses should cost about 1,000*l.* a pair. Eventually tenders were asked, and then it was found that the lowest tender was for 2,250*l.* a pair. Therefore that fell to the ground. His instructions were that all along the defendant had been in consultation with a Mr. Collins. Defendant then instructed the plaintiffs to draw the plans in order that the cost of the houses might be considerably reduced. Plaintiffs pointed out all along that the houses the defendant desired could not be erected for 1,000*l.* a pair. In January, 1903, Mr. Collins was sent by the defendant to confer with Mr. Pridmore, of Messrs. Lee & Sons, and the result was that the plans ultimately carried out were the plans altered at this conference. Eventually defendant returned the plaintiffs' plans, but he had copies, said the learned counsel, and Collins agreed to build for 1,650*l.* a pair. The plans and specifications worked to would be found practically to be the plans and specifications of the plaintiffs. As a matter of fact, the plaintiffs found that the plans the houses were erected from were their plans "builderised," if he might use the word. In May, 1902, a Mr. Farrow reported upon the houses that the defendant had erected to the effect that they substantially corresponded with the plaintiffs' plans. Plaintiffs wrote offering to accept 150*l.* for the work they had done, but the defendant replied repudiating any claim upon him. The present proceedings ultimately followed.

Mr. Ernest Runtz, the senior member of the plaintiff firm, gave evidence as to having known the defendant about twenty-seven years. He said that all along he told the defendant that the houses he desired could not be built for 1,000*l.* a pair. Defendant told him to get as near to it as he could. Witness prepared a number of sketches which he submitted to the defendant. Plaintiffs were liable to the quantity surveyors for their fees, some 50*l.* He told the defendant that the houses would probably cost more than 1,500*l.* a pair. From start to finish they had never had a penny from the defendant. Mr. Baker was always, from the commencement, altering his mind. There was a meeting, on December 30, between himself, Mr. Baker, Mr. Collins, the builder, and Mr. Pridmore, and he then received defendant's instructions to reduce the frontages of the houses so as to reduce the cost, and so get nine houses instead of eight. That was done, and the plans were in Court. Mr. Ford was the actual draughtsman in the matter. He had seen the houses which were built and the plan deposited with the Local Board. The plan was similar to his, and the elevation was similar. In his opinion, his elevation and drawings must have been used for the purpose of erecting the houses in question. That was self-evident even to a layman. His designs and quantities were for a good class of house of about 65*l.* a year rental. The present houses were not so well built as his would have been, and they were a little smaller than his would have been.

Cross-examined by Mr. Dickens,

At the time in question he had not done much small suburban work. His plans and elevation were not taken from a plan which Mr. Collins lent him. He could not remember the plan produced. There was no resemblance in the elevation in the plan produced to his elevation. He did not take any sketch of the elevation of the houses at Muswell-hill. It was not likely that he would take a speculative builder's plans to base his own plans on. He did not think that houses which would cost 2,250*l.* a pair would be any good from an investment point of view in that neighbourhood.

Do you suggest that you ever put before the defendant, as a substantive proposition, that you could build these houses for 1,600*l.* a pair under your agreement?—I could not do that. It depended upon what Mr. Baker wanted.

I suggest to you that your plan was taken from Mr. Collins's plan, and that you used a design which was common to both of us?

The witness emphatically denied that his plan was taken from Mr. Collins's plan. He said that the principle of the plan was the same, but the elevation was entirely different.

Examination continued,

At the first interview, before the letter of April 24 was written, defendant did not point out to him that it was essential that he made the plans so that defendant got a pair of houses for 1,000*l.* Defendant did ask him to get them as cheap as possible. Defendant wanted a certain class of house built, and suggested 1,000*l.* a pair. Witness told him from the start, when he saw the Muswell-hill houses, that that could not be done, and then the defendant said, "go on with your work, and if it comes out at too much we shall have to boil it down."

Did not Mr. Baker tell you in June that they were not to exceed 1,200*l.* a pair?—I have no recollection of it; but he might have done so.

Did he not make it a condition that, in any event, they were not to exceed 1,200*l.*?—No; I should not have agreed to it.

What amount did you think building to your plans would be?—I imagined that they would come out at about 1,600*l.* or 1,700*l.* a pair originally, and then I thought we might have to carve it down a bit. It was the question of material which affected the cost. The plans need not have been revised in order to build cheaper.

Mr. G. M. Ford gave evidence as to drawing the plans in question. He said he had never entered into any fixed figure for the cost of the houses with the defendant. Defendant seemed to think that, if he could get the houses put up for about 1,600*l.* a pair, he could manage it from an investment point of view. He had seen the houses which had been erected, and could see that their elevation had been followed. He was the author of the elevation, but he did not claim the plan.

Cross-examined,

Defendant had never told him that he wished the price limited to 1,000*l.* When he was drawing the plans he had a general idea that the houses could be put up for anything between 1,400*l.* and 1,600*l.*

Mr. H. T. B. Spencer, A.R.I.B.A., and manager to the plaintiffs, examined, said he called on Mr. Baker on January 28, 1903, and took with him a list of suggestions made by Mr. Collins and Mr. Pridmore. He told defendant that certain of the suggestions did not commend themselves to the plaintiffs. He said that some of the suggestions were what a speculative builder would make use of, but were such that an architect could not pass. He told the defendant that the object of the discussion was to reduce the price of the buildings. On May 9, 1903, he went to the offices of the Local Board, and saw the deposited plans there. The plans seemed almost identical with the plans that the plaintiffs had prepared, but the fireplace in the hall was omitted. That was the chief difference. He noticed, too, a great resemblance to the plaintiffs' elevation. All the suggestions that the plaintiffs had made seemed to have been carried out. The houses that the defendant had built were according to the plaintiffs' plans with the modified suggestions.

Cross-examined,

He took no part in the preparation of the plans.

Mr. Arthur Pridmore, a quantity surveyor, and partner in the firm of Messrs. J. S. Lee & Sons, quantity surveyors, of 35, Craven-street, Strand, examined, said he had seen the defendant's houses, and had compared them with the plaintiffs' plans and specifications made on January 12, and he came to the conclusion that the buildings, as built, were plaintiffs' drawings, carried out with a list of modifications applied. The houses were the plaintiffs' design applied in the cheapest possible way.

Mr. F. R. Farrow, F.R.I.B.A., of the firm of Messrs. Coulson, Farrow, & Nesbitt, 29, New Bridge-street, E.C., said that last year he had inspected the houses built by Mr. Collins for defendant, and found that they corresponded with the plaintiffs' plans. The size of the rooms had been reduced, and the arrangement of the hall slightly varied. The elevations were the same as plaintiffs, with slight modifications.

This being the plaintiffs' case,

Mr. Dickens, in opening the defendant's case, said that his client had always been anxious that this matter should go through with the plaintiffs, but he had had to employ Mr. Hunter, another architect. The defendant sought the advice of the plaintiffs in this matter, and the basis of the transaction between the parties was contained in a letter from the defendant to the plaintiffs, which stated that he desired to erect the houses at a cost of 1,000*l.* a pair. The plaintiffs had got out plans which were impossible to work to for that amount. Certain alterations were made in the plans, but the delay was great, extending over some months. Even after great delay, it was found that the plans were of no use to the defendant, and, after the lapse of ten months, he put an end to his dealings with the plaintiffs, and had to take steps to get other plans and build his houses. Mr. Collins and Mr. Hunter would give evidence that they had no plans of the plaintiffs or worked in any way to them. The similarity arose through the defendant desiring his houses erected after the style of those at Muswell-hill, which Mr. Hunter saw. Referring to the counter-claim the learned counsel said that the defendant had lost money owing to the delay.

Mr. Sydney Herbert Baker, the defendant, a surveyor and brewery agent and valuer, of No. 62, Coleman-street, E.C., gave evidence generally corroborating the statement of counsel. He said that at the outset he told Mr. Runtz that he did not wish the houses to cost more than 1,000*l.* a pair, but, subsequently, agreed to go to 1,200*l.* No other sum was mentioned in his hearing than the outside price of 600*l.* a house. He afterwards employed Mr. Hunter as his architect, and he returned the plaintiffs their plans in February, 1903.

Cross-examined by Mr. Danckwerts,

1,600*l.* was never named to him as the minimum cost. He never said that he did not wish the price to exceed 1,600*l.* a pair. He did not give Mr. Collins the plaintiffs' plans.

Mr. Arthur Collins, examined, said he was

a builder, and that he built the houses in question from their own plans. He prepared the plan produced. There might have been certain things suggested to him by Mr. Runtz.

Cross-examined by Mr. Danckwerts,

In June, 1902, he lent the pan to Mr. Runtz. His plan was not practically a reproduction of Mr. Runtz's plan.

Mr. Chas. Hunter, A.R.I.B.A., examined, said he had had thirty-five years' experience as an architect, and, early in 1903, he received instructions from Mr. Baker to prepare plans for the erection of the houses in question. He received a plan from Mr. Collins and prepared a plan of his own on those lines. The houses were built from that plan. He saw Mr. Runtz's plan for the first time at counsel's chambers about a week before He saw nothing remarkable about the plaintiffs' elevation.

Mr. A. E. Pridmore, an architect and surveyor, examined, said he had seen the plans in question. He saw nothing remarkably original in plaintiffs' plans. The design was quite an ordinary one for a suburban villa. There was no artistic merit about it.

This being the defendant's case, learned counsel addressed the jury on behalf of their respective clients.

At the conclusion of his lordship's summing-up, the jury returned a verdict for the plaintiffs for 140*l.*, this sum to include the quantity surveyor's fees, and judgment was entered accordingly for the plaintiffs, with costs. The defendants counter-claim was struck out, without costs.

HEAVY DAMAGES AGAINST CONTRACTORS.

IN the King's Bench Division, on the 3rd inst., the hearing was concluded, after an eight-days' trial, of the case of the Mayor, Aldermen, and Burgesses of the Borough of Plymouth *v.* Pethick Brothers—an action by the plaintiffs against the defendants to recover upwards of 25,000*l.* damages for alleged fraudulent misrepresentation and breach of contract in the carrying out of drainage work for the plaintiffs. The defence was a denial of the alleged fraudulent misrepresentation and breach of contract, and defendants counter-claimed for 1,988*l.* 7*s.* 8d., the balance they alleged to be due to them from the plaintiffs under the contract.

Mr. Fletcher Moulton, K.C., Mr. J. F. P. Rawlinson, K.C., Mr. A. A. Hudson, and Mr. Fletcher Moulton, jun., appeared for the plaintiffs, and Sir Edward Clarke, K.C., Mr. Foote, K.C., Mr. Ashton Cross, and Mr. Holman Gregory for the defendants.

Mr. Moulton, in opening the plaintiffs' case, said that the defendants, in April, 1900, entered into a contract with the plaintiffs to construct an outfall sewer. The plan was to take the sewage from the treating tanks by an underground sewer in tunnel to the edge of low-water mark, and then to discharge it by means of two pipes buried in the bed of Plymouth Sound to something like a depth of 70 ft. or 80 ft. at extreme low water. The plaintiff Corporation gave the Admiralty an undertaking that the pipes were to be laid under the sea in a trench covered with concrete, and that the pipes were to be below the bed of the sea. The work was to be done by skilled divers under the direction of Mr. James Mansegh, a skilled engineer. The contract price was 21,000*l.*, and the work had to be completed by December 9, 1901. There was a provision in the contract that if the work was unsatisfactory the plaintiffs were empowered to take the work out of the contractors' hands, and the work had to be carried out according to the specification, and the engineer's certificate was to be binding on the contractors. On August 8, 1902, defendants gave notice that they had completed the contract. Mr. Mansegh, on behalf of the plaintiffs, employed a man to dive to examine the work done, and that person took his information from people employed by the defendants. When the work had been completed plaintiffs' suspicions were aroused that the work was not right, and afterwards it was found that false representations had been made. A claim was put forward for exceptionally deep work, much larger than the total amount of the contract. Final certificates were given in the belief that the representations were true. In January, 1903, the engineer, becoming suspicious, employed divers, who made a survey under water, when it was found that defendants had made an excavation in the bed of the sea not sufficient to cover either of the pipes, and one of the pipes was, in some places, entirely above the existing level, and they covered it with a kind of mound of concrete, doing that which the plaintiffs had been paying so much to avoid. The defendants, however, not being satisfied, had a survey made, and their divers' account was that the pipes were properly sunk in trench. Subsequently, a joint survey was made by Messrs. Coode, Son, & Matthews, by which both parties agreed to be bound. That firm's report substantially supported the accuracy of the reports on surveys made by the plaintiffs. The plaintiffs then had to put the work into other hands so as to have it constructed in a proper manner. The engineer afterwards cancelled the certificates, and the only question to be determined was the amount the defendants had been overpaid. There was another head of complaint—namely, that the work was scamped, and that the joints had not been properly made.

Evidence having been given that the work was not carried out according to the terms of the contract,

Sir Edward Clarke, in opening the defendants' case, said that when his clients found that they had been mistaken as to the work done they offered to guarantee the work for ten years, or leave the question to arbitration. The answer was a writ, and, as the plaintiffs charged them with fraud, they determined to fight the question until they had retrieved their character from that aspersion.

Mr. Benjamin Pethick gave evidence to the effect that till April, 1902, he was never told that the pipes were not laid in trench, and he accepted the statements sent him. A man, named Pennington, was sent down to control the work for the plaintiffs, and he had the pipes taken out and relaid, as he was not satisfied with their position.

Cross-examined,

Messrs. Coode, Son, & Matthews' report first told him that the pipes were not in trench. His men had deceived him.

Other evidence having been given, Sir Edward Clarke stated that a settlement had been arrived at. He said that the matter which compelled the defendants to fight the case was the charge of fraud involving the late Mr. Pethick. As long as that charge was persisted in the defendants had determined to fight the case out. As Mr. Moulton would make a statement exonerating the defendants from the charge of fraud, and would agree to a verdict being given for the defendants on that issue, defendants had agreed, on the other part of the case which referred to the inadequacy of the work done by them, to pay the plaintiffs the sum of 20,000*l.*, which had been fixed by Mr. Mansegh as the amount required to put the work right.

Mr. Moulton, on behalf of the plaintiffs, said he was glad to accept the assurance of Sir Edward Clarke that the principals in this case were free from the gross fraud that had been committed. The plaintiffs, on his advice, would accept a verdict for 20,000*l.*, and costs, and with regard to the charge of fraud, there would be a verdict on that issue for the defendants.

Judgment accordingly for the plaintiffs for 20,000*l.*, and the general costs of the action.

LONDON COUNTY COUNCIL *v.* JACKSON.

THIS case, in which the Council claimed Clapton Terrace-mews as a public highway, came again before the magistrate on Friday last week. Mr. Daldy, instructed by the solicitor to the London County Council, appeared for the Council, and Mr. Bodkin, instructed by Messrs. Beckingsale, Greenwood, Tucker, & Cross, solicitors, appeared for Mr. Jackson.

Mr. Scorgie, the Borough Engineer, and others were now called as witnesses on behalf of the Council, and Mr. Bros, the Registrar of the Southwark County Court, with Mr. Josiah Goodman, and a number of other witnesses, gave evidence on behalf of Mr. Jackson, who contended that the mews was private property and not a public highway, and, in the course of the proceedings, it transpired that Mr. Josiah Goodman and other witnesses had, on occasions, turned people back when seeking to use the mews. Mr. Fordham, the magistrate, dismissed the summons, with ten guineas costs, and stated that he had himself visited the mews, and, having carefully considered the evidence, which had been very fairly given by the witnesses on both sides, was of the opinion that the mews was private property belonging to the owners of the houses in Clapton-terrace, now Clapton-common, and that there had not been sufficient use of the mews by the public so as to take away the rights of the owners in question.

Mr. Daldy, for the Council, asked for a case to be stated for the opinion of a higher Court, but the magistrate declined to do this.—*North London Guardian.*

CITY BUILDING DISPUTE.

THE case of the North Borneo State Cigar Syndicate, Ltd. *v.* the City Offices Company, Ltd., came before Mr. Justice Lawrence and a special jury in the King's Bench Division on the 4th inst.—an action by the plaintiffs against the defendants for damages for loss sustained by reason of the alleged wrongful acts of the defendants by which the customers coming to the plaintiffs' shop were hindered by the defendants' building operations. Defendants pleaded a denial of liability.

Mr. H. F. Dickens, K.C., and Mr. Clode appeared for the plaintiffs, and Mr. J. Eldon Bankes, K.C., and Mr. Oddy for the defendants.

Mr. Dickens, in opening the case, said that the plaintiffs carried on business at No. 86, Leadenhall-street, E.C., and the defendants were rebuilding the premises next door to the plaintiffs' shop. The plaintiffs alleged that the rebuilding was done in such a manner as to greatly inconvenience their business. A large hoarding had been erected close to the plaintiffs' shop, and the party wall had been shored up by means of a large beam just inside, and another large beam just outside the plaintiffs' door. The result of these projections was that the takings, which depended considerably on the traffic passing, had fallen off greatly. In March, 1903, the operations commenced, when the premises were pulled down. In September, 1903, the rebuilding commenced. A hoarding 60 ft. long, 12 ft. high, and abutting on to the pavement some 3½ ft. was erected, and this had caused a great inconvenience to the plaintiffs' business. Whilst admitting the defendants' right to rebuild their premises, the learned counsel referred to the 90th section of the London Building Act, which laid it down that the rebuilding must be done in such a manner and at such times so as not to cause unnecessary annoyance to the adjoining owner or occupier. His case was that the work had been done in a manner contrary to the section.

After evidence had been given in support of the plaintiffs' case, his lordship, addressing Mr. Dickens, said he had to show that the defendants acted unreasonably, and, failing that, the plaintiffs had no cause of action against the defendants.

Mr. Dickens submitted that all he had to show was that the defendants had committed a nuisance.

His Lordship: They have a right under the London Building Act to build the house.

Mr. Dickens: Yes; so long as they do not cause unnecessary inconvenience and an annoyance.

Mr. Bankes submitted that there was no case to go to the jury.

His lordship held there was no case to go to the jury, and entered judgment for the defendants, with costs. He also ordered the sum paid into Court by the defendants to be paid out to them.

PATENTS OF THE WEEK

APPLICATIONS PUBLISHED.*

5,311 of 1904.—G. S. MAYHEW: *Machine for Assembling the Slices Cut from a Deal or Plank into Compound or Composition Board.*

An assembling machine for joining slices cut from a deal, comprising a magazine for receiving said slices, and a double reciprocatory clutch frame or pusher for feeding said slices from the magazine between guides forward through the machine, a wiper adapted to glue respectively the edges of each of said slices as it is passed from the magazine, a fan or fans adapted to dust sawdust over the joints formed between said slices, and a series of brushes surrounded by heated air adapted to clean the compo-boards formed from said slices of the superfluous glue after having been dusted.

8,379 of 1904.—G. C. BROWN: *Sliding Upper Sashes of those Windows which are Adapted to Open or Turn Inwards.*

This invention relates to the sliding sashes of windows which are adapted to open or turn inwards, and has reference to the upper sashes of such windows. Heretofore there has been great difficulty experienced in providing a satisfactory hinging or turning arrangement for the upper sash. In this invention the upper sash is made in two parts—namely, an outer sliding sash and an inner pivoting sash. The sliding sash practically constitutes a frame, in which the inner sash is pivoted. The inner sash is, or may be, pivoted by means of vertical pivot pins at the centre of each cross-rail, which pins work in sockets in the cross-rails of the outer sliding sash. The outer sliding sash has preferably deeper cross-rails than usual. To ensure that the inner pivoted sash will close weather-tight in the outer sliding sash, the latter is provided with weather strips, which cover the joints. At the lower end of the combined sash the arrangement may be such that the cross-joint is below the level of the upper cross-roll of the lower sash when the window is closed. To prevent water coming in through the joint in the upper cross-roll of the upper sash, the upper parting bead of the

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made

window frame may be made much deeper than usual so as to cover the joint.

8,930 of 1904.—E. WHITWELL: *Siphonic Flushing Arrangement for Water-closets, Urinals, and the like.*

This invention comprises certain methods of causing the discharge by siphonic action of all cisterns, and consists in connecting the part of the cistern containing the imprisoned air to the outlet of water-closets, slop-closets, urinals, and the like, by a small pipe, and arranging it and connecting it in such a manner that, when a quantity of water flows through the said outlet, it will be the means of bringing about the siphonic discharge of the cistern.

9,769 of 1904.—L. LEFRANC: *Manufacture of Artificial Stone in Imitation of Marble or Granite, and the like.*

Process for the manufacture of artificial stone, characterised by the production of material by mixing and fusing calcium fluoride with sulphate of lime or carbonate of lime, with or without the addition of silicious and other sand, alkaline, and earthy oxides, and clay of different kinds.

10,659 of 1904.—J. ELLIS: *Appliances for Fastening Window Sashes, and the like.*

Constructing window sash fasteners from a holed plate affixable to the top sash and a shoe containing a screw bolt or spring-controlled bolt to the bottom sash, the nose of the bolt pressing against the holed plate when the screw or spring-controlled bolt is operated to lock the sashes, and so press the sashes firmly against their respective beadings as to prevent their being moved.

24,944 of 1904.—A. HOCH and C. HANNEMANN: *School Desks.*

A school desk, consisting in the combination of a grid-like footboard, below which is extended, capable of being rolled up and preferably guided in lateral grooves, a cloth or the like, saturated with a disinfectant, and arranged to be taken out from above the footboard when rolled up.

14,795 of 1904.—M. J. ADAMS: *Lavatories, Baths, and Closets.*

To effect economy of space in a lavatory or bathroom, a lavatory basin is constructed that is placed over a closet or bath. If, when placed over a closet, it is desired to use the closet, then the lavatory basin is merely pushed aside. In order that this may be readily effected, the lavatory basin is carried from the wall face or from a suitable bracket or stand by a swivel support, enabling the user to move it to uncover the closet or bath.

5,712 of 1904.—J. J. SHEDLOCK: *Manufacture of Artificial Asphalt, or the like Composition.*

Process for the manufacture of artificial asphalt or the like composition from a mixture of lime or other suitable solid material, and tar or other suitable liquid hydrocarbonaceous material in suitable proportions, which consists in causing said mixture to descend in a sub-divided condition in a closed chamber, and, during such descent, subjecting said material in detail to the action of highly-heated inert aeriform fluid or fluids in such chamber, vaporising the more volatile constituents of said mixture and carrying off said vapours, and thereby producing or developing pitch or pitch-like deposit in intimate admixture, and incorporated in and with the solid particles of said mixture so that the resulting mixture, when subjected to hammering or other suitable compression while heated, will thereby be formed into a hard and solid surface.

18,904 of 1904.—W. M. SANDISON: *Prevention and Laying of Dust.*

Means for preventing or laying dust on road, street, or other surfaces, consisting of sprinkling or saturating such surfaces with an aqueous emulsion produced from wool fat or wool wax and an alkali or alkaline salt of a deliquescent nature.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 21.—By CHEFFINS & SLOCOMBE (at Saffron Walden).

Elmdon, Essex.—"Cooper's End Farm," 112 a. 2 r. 35 p., f., y.r. 70*l.* £1,000

By J. C. PLATT (at Hammersmith).

Hanwell.—21, 23 and 25, Uxbridge-rd., f., e.r. 115*l.* 1,700

March 27.—By H. J. BROMLEY.

Battersea.—81, Lavender-sweep, u.t. 75¼ yrs., g.r. 7*l.*, y.r. 36*l.* 385

Norwood.—41, Eden-rd., u.t. 35 yrs., g.r. 3*l.* 10s., w.r. 26*l.* 100

Sydenham.—Sydenham Hill-rd., "Durham Cottage" and "Plumbly Cottage," f., p. 575

21, Prospect-rd., f., w.r. 20*l.* 16s. 270

By BROWETT & TAYLOR.

Highbury.—14A, Highbury-pl. (s.), f., y.r. 125*l.* 2,130

By C. RAWLEY, CROSS, & CO.

Battersea.—62 to 66, Eccles-rd., u.t. 75 yrs., g.r. 32*l.* 10s., y.r. 152*l.* 10s. £1,500

Shepherd's Bush.—34 to 40 (even), Richmond-rd., f., y.r. 126*l.* 2,295

By F. J. SARSON (at Llandudno).

Llandudno, Carnarvon.—Mostyn-st., "The Grand Theatre," f., p. 10,700

March 28.—By DAVID BURNETT & CO.

Thornton Heath.—85, Brigstock-rd., f., y.r. 55*l.* 700

Hampton Hill Middlesex.—8, 9, and 11, Burton's-rd., f., y.r. 76*l.* 7s. 890

Wandsworth.—90 and 92, South-st. (s.), u.t. 76½ yrs., g.r. 16*l.*, y.r. 35*l.* 330

By DUNCAN & KIMPTON.

Islington.—Essex-rd., f.g. rents 32*l.*, reversion in 39½ yrs. 930

Islington.—Bryan-st., l.g. rents 28*l.* 10s., u.t. 39 yrs., g.r. 8*l.* 290

By GEORGE HEAD & CO.

Gray's Inn-road.—No. 318 (s.), f., y.r. 70*l.* .. 1,950

Edgware-road.—97 and 98, Star-st., u.t. 16 yrs., g.r. 12*l.* 12s., y.r. 126*l.* 14s. 470

By STOCKINGS & POTTER.

Camden Town.—32, Delancey-st., f., e.r. 55*l.* 860

By FREDERICK WARMAN.

Highbury.—15, Mentone-rd., u.t. 59½ yrs., g.r. 7*l.*, e.r. 50*l.* 500

56, Highbury-gr., u.t. 86½ yrs., g.r. 12*l.*, e.r. 5*l.* 1,050

Highgate.—8, 9, 10, and 11, Gordon-pl., f., w.r. 93*l.* 12s. 600

Enfield.—Gordon Hill, a freehold building plot 500

Gordon Villas, f.g.r. 5*l.*, reversion in 72 yrs. 121

March 29.—By ABB & CO.

Manor Park.—26 to 48 (even), Herbert-rd., u.t. 72½ yrs., g.r. 24*l.*, w.r. 241*l.* 16s. 1,200

By E. & S. SMITH.

Clerkenwell.—16, Holford-sq., u.t. 27 yrs., g.r. 5*l.*, e.r. 60*l.* 575

Stratford.—175 to 183 (odd), Chobham-rd., and 6 to 11, Heaton-pl., u.t. 94 yrs., g.r. 165*l.*, w.r. 451*l.* 2s. 500

Holloway.—3, Tuffnell Park-rd., u.t. 26 yrs., g.r. 9*l.*, y.r. 65*l.* 655

Fulbrook-rd., l.g. rents 61*l.*, u.t. 51 yrs., g.r. 10s. 1,185

Kentish Town.—St. Alban's Villas, l.g.r. 15*l.*, u.t. 44 yrs., g.r. 7*l.* 135

Finchley.—30, Vernon-ter., f., e.r. 35*l.* 450

By SOUTHON & ROBINSON.

Wandsworth.—87 to 109 (odd), Beechcroft-rd., u.t. 72½ yrs., g.r. 51*l.*, w.r. 322*l.* 8s. 2,025

By R. TIDEY & SON.

De Beauvoir Town.—46, Upton-rd., u.t. 14½ yrs., g.r. 4*l.*, y.r. 38*l.* 235

20, Church-rd., u.t. 67½ yrs., g.r. 14*l.* 5s., y.r. 39*l.* 285

Camden Town.—43, Chalk Farm-rd. (s.), u.t. 19½ yrs., g.r. 8*l.*, y.r. 60*l.* 300

Kingsland.—15 and 17, Downham-rd., u.t. 14 yrs., g.r. 27*l.*, y.r. 97*l.* 350

95, Downham-rd., u.t. 67 yrs., g.r. 12*l.*, y.r. 40*l.* 300

By WILLIS, CROUCH, & LEE.

Willesden.—17, Eric-rd., u.t. 90 yrs., g.r. 6*l.*, e.r. 42*l.* 345

By A. G. BONSOR.

Teddington, Middlesex.—Cambridge-rd., "Ondini" and 1¼ acres, f., p. 1,500

Surbiton, Surrey.—13 to 16, Cleaveland-rd., u.t. 51 yrs., g.r. 12*l.* 12s., w.r. 105*l.* 6s. .. 640

74 to 80, Cleaveland-rd., u.t. 51 and 58 yrs., g.r. 23*l.* 16s., w.r. 185*l.* 18s. 1,025

By WYATT & SON (at Chichester).

East Wittering, Sussex.—"Somerley Farm," 33 a. 2 r. 39 p., f. 1,000

New Barn Enclosures, 21 a. 0 r. 26 p., f. .. 730

West Wittering, Sussex.—"Hale Farm," 104 a. 1 r. 13 p., f. 3,050

Chichester, Sussex.—59, South-st. (s.), f., y.r. 26*l.* 430

Bognor-rd., "Glanville Villa," f., p. 340

7, 8, and 9, New Broyle-rd. (s.), f., y.r. 50*l.* 765

By A. DOWELL (at Edinburgh).

Tarbolton, Ayrshire.—"Afton Lodge" and 33 acres 4,110

March 30.—By HARRY CROOK.

Clerkenwell.—64, Myddelton-sq., w.r. 128*l.* 14s.; also l.g.r. 8*l.* 8s., u.t. 6½ yrs., g.r. 16*l.* 16s. 190

By P. J. DIXON & SON.

Hackney.—Rutland-rd., etc., l.g. rents 36*l.*, u.t. 47¾ yrs., g.r. 2*l.* 5s. 626

24, 26, and 28, Tuilerie-st., f., y.r. 88*l.* 1,200

By E. HOLSWORTH.

Stoke Newington.—16, Brodia-rd., u.t. 69¾ yrs., g.r. 6*l.*, y.r. 28*l.* 320

Clapton.—6, Reighton-rd., u.t. 73¼ yrs., g.r. 7*l.*, e.r 48*l.* 425

By JENKINS & SONS.

New Cross.—106, Lewisham High-rd., u.t. 47¼ yrs., g.r. 5*l.*, y.r. 38*l.* 310

59, Lewisham High-rd., u.t. 39¾ yrs., g.r. 6*l.* 5s., p. 430

126, Lewisham High-rd., u.t. 47½ yrs., g.r. 4*l.*, y.r. 36*l.* 350

2 and 4, Brockley-rd., u.t. 18½ yrs., g.r. 2*l.* 10s., y.r. 55*l.* 10s. 440

By NEWELL & HAMLYN.

Greenwich.—Tyler-st., f.g.r. 3*l.*, reversion in 16 yrs. 155

Colomb-st., f.g. rents 5*l.* 12s. 6d., reversion in 16 yrs. 240

Colomb-st., f.g.r. 34*l.* 10s., reversion in 20 yrs. 1,600

Colomb-st., f.g. rents 42*l.* 3s. 6d., reversion in 36 to 38 yrs. 1,445

Colomb-st., "The Duke of Edinburgh" p.h., f.g.r. 6*l.* 4s., reversion in 38 yrs. 410

Walnut Tree-rd., f.g. rents 6*l.* 8s., reversion in 16 yrs. 295

Vanbrugh-hill, f.g.r. 4*l.* 4s., reversion in 16 yrs. 150

Trafalgar-rd., f.g. rents 36*l.*, reversion in 74 yrs. 1,070

196, Trafalgar-rd. (s.), f., y.r. 60*l.* 1,410

9, 11, 13, and 15, Colomb-st., f., w.r. 81*l.* 18s. 850

By MARSLAND & MARSLAND.

Lee.—16, 18, and 20, Brightfield-rd., u.t. 55½ yrs., g.r. 4*l.* 10s., w.r. 60*l.* 13s. 4d. £525

By NEWBON, EDWARDS, & SHEPHARD.

Barnsbury.—41, College-st., u.t. 11 yrs., g.r. 7*l.*, y.r. 36*l.* 150

Caledonian-road.—37 and 38, Charlotte-ter., u.t. 16 yrs., g.r. 10*l.* 10s., y.r. 62*l.* 295

Finsbury Park.—39, Lennox-rd., u.t. 60 yrs., g.r. 6*l.*, y.r. 32*l.* 325

Wood Green.—94, Lordship-la., f., e.r. 60*l.* .. 740

By T. D. PEACEY.

Hampstead-road.—209, Stanhope-st., u.t. 34 yrs., g.r. 6*l.*, y.r. 55*l.* 560

By ROBINS, GORE, & MERCER.

Soho.—2, Diadem-ct., f., y.r. 60*l.* 1,125

By RUTLEY, SON, & VINE.

Euston-road.—147, Stanhope-st., u.t. 19½ yrs., g.r. 20*l.*, y.r. 55*l.* 250

Regent's Park.—139, Albert-st., f., y.r. 52*l.* .. 720

Haverstock Hill.—96 and 137, Adelaide-rd., u.t. 40½ yrs., g.r. 30*l.*, y.r. 140*l.* 985

Camden Town.—42, Georgiana-st., u.t. 34½ yrs., g.r. 5*l.* 5s., y.r. 41*l.* 390

Bayswater.—Leinster-gdns., l.g.r. 3*l.*, u.t. 45½ yrs., g.r. 5*l.* 455

Westbourne-gr., l.g.r. 38*l.*, u.t. 38½ yrs., g.r. 6*l.* 610

Camden Town.—Georgiana-st., l.g.r. 36*l.*, u.t. 34½ yrs., g.r. 16*l.* 315

By RUTTERS'.

Fingringhoe, Essex.—"The Hay Farm," 66 a. 3 r. 9 p., f., p. 1,100

Stanwell, Middlesex.—Freehold cottage and land, 3 a. 2 r. 0 p., p. 300

By STIMSON & SONS.

Stepney.—113, Stepne-green, f., y.r. 30*l.* 465

Kennington.—21 to 24, Fitzalan-st., u.t. 89 yrs., g.r. 48*l.*, w.r. 296*l.* 8s. 2,300

Willesden.—9, 10, and 11, Taylor's-la. (s.), u.t. 98 yrs., g.r. 19*l.* 10s., y.r. 113*l.* 795

Dalston.—18, Grayhurst-rd., u.t. 44 yrs., g.r. 5*l.*, y.r. 32*l.* 345

Brockley.—151, Manor-rd., u.t. 60 yrs., g.r. 6*l.*, e.r. 32*l.* 195

Leytonstone.—1 to 4, Eliza-villas, u.t. 63½ yrs., g.r. 16*l.* 16s., w.r. 104*l.* 585

By HENRY HENDRIKS (at Birmingham).

Birmingham, Warwick.—115, Dale-end (s.), f., y.r. 30*l.* 625

Erdington, Warwick.—Orchard-rd., a plot of building land, area 1,395 yds., f. 255

Aston, Warwick.—205 to 215 (odd), Park-rd., and four houses in rear, u.t. 69 yrs., g.r. 31*l.* 6s. 8d., y.r. 189*l.* 1,175

Small Heath, Worcester.—61 to 71 (odd), Byron-rd., u.t. 90 yrs., g.r. 18*l.*, w.r. 123*l.* 10s. 880

By WORSFALL & HAYWARD (at Dover).

Dover, Kent.—Elms Vale-rd., "Chevallier House," f., y.r. 25*l.* 350

2, Blenheim-sq., f., w.r. 26*l.* 340

15, De Burgh-st., f., w.r. 22*l.* 2s. 255

21, Marine-parade, u.t. 20 yrs., g.r. 1*l.* 16s. 9d., p. 530

11, High-st., f., p. 750

5, St. Radigund's-rd., f., w.r. 16*l.* 18s. 205

March 31.—By GEORGE BILLINGS.

Bethnal Green.—17 to 30, Prospect-ter., f., w.r. 515*l.* 12s. 4,350

1 to 15, Prospect-ter., and 27 and 29, Usk-st., u.t. 43¾ yrs., g.r. 120*l.*, e.r. 585*l.* 2,085

16 and 17, Bonwell-st., u.t. 31 yrs., g.r. 4*l.* 4s., w.r. 54*l.* 12s. 250

15, 27, and 28, Bonwell-st., w.r. 85*l.* 16s., also l.g.r. 2*l.* 12s. 6d., u.t. 34 yrs., g.r. 10*l.* 10s. 400

Stepney.—13 to 33 (odd), Knott-st., f., w.r. 156*l.* 675

By JOHN BOTT & SONS.

Norwood.—Thurlow-pk.-rd., "Holmwood" and "Locksley," u.t. 74¾ yrs., g.r. 13*l.*, w.r. 130*l.* 405

Hearne Hill.—60, Kestrel-av., "Rosendale," u.t. 75 yrs., g.r. 7*l.* 15s., p. 530

By LEOPOLD FARMER & SONS.

Wapping.—17, High-st. (manufacturing premises), area 7,000 ft., f., e.r. 200*l.* 2,000

By FISHER, STANHOPE, & DRAKE.

Stoke Newington.—164, Boleyn-rd. (s.), u.t. 68 yrs., g.r. 14*l.* 10s., y.r. 48*l.* 380

By MAY & PHILPOT.

Streatham.—17, Palace-rd., f., e.r. 130*l.* 2,300

Brixton.—12, Holmewood-rd., u.t. 86¾ yrs., g.r. 7*l.* 10s., e.r. 45*l.* 500

99, Dalyell-rd., u.t. 67 yrs., g.r. 6*l.*, p., e.r. 38*l.* 340

13 and 13a, Railton-rd. (s.), u.t. 63½ yrs., g.r. 8*l.*, y.r. 70*l.* 600

Torrens-rd., f.g. rents 38*l.*, reversion in 67 yrs. 988

Horsford-rd., f.g. rents 40*l.*, reversion in 67 yrs. 1,055

By FRED. VARLEY & SON.

Tottenham.—90, Northumberland-pk., u.t. 65 yrs., g.r. 4*l.*, y.r. 36*l.* 260

Kentish Town.—2, Islip-st., and 1a, 2a, and 3a, Frideswade-pl., u.t. 43 yrs., g.r. 8*l.*, y.r. 74*l.* 14s. 450

Finsbury Park.—32, Ambler-rd., u.t. 59 yrs., g.r. 3*l.*, y.r. 40*l.* 450

Wood Green.—17, Whymark-av., u.t. 92 yrs., g.r. 6*l.* 6s., w.r. 44*l.* 4s. 285

Hornsey.—St. Margaret's-av., f.g.r. 33*l.* 10s., reversion in 87 yrs. 620

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, APRIL 7.

Architectural Association.—Mr. H. Phillips Fletcher on "The Buildings of the World's Fair, St. Louis Exhibition, 1904." 7.30 p.m.

Royal Institution.—Mr. Alfred Moseley, C.M.G., on "American Industry." 9 p.m.

Institution of Civil Engineers (Students' Meetings).—Papers to be read (1) "Cofferdams for Dock Use," by Mr. R. G. Clark; (2) "Bath Corporation Waterworks Extension," by Mr. J. R. Fox. 8 p.m.

Society of Engineers (Westminster Palace Hotel).—Mr. George H. Hughes on "Water Works Construction." 8 p.m.

SATURDAY, APRIL 8.

Northern Architectural Association.—Visit to Churches of S. Hilda and S. Barnabas, Newcastle-on-Tyne.

Royal Institution.—The Right Hon. Lord Rayleigh on "Some Controverted Questions of Optics," II. 3 p.m.

Royal Sanitary Institute.—A Provincial Sessional Meeting, to be held at Civil-court, Small-street, Bristol, when a Discussion will take place on "Isolation Hospitals." The Discussion will be opened by Dr. D. S. Davies and Mr. T. H. Yabbicom, City Engineer and Surveyor. The Chair will be taken at 11 a.m. by Mr. W. Whitaker, B.A., F.R.S., F.G.S. (Chairman of Council of the Institute).

MONDAY, APRIL 10.

Surveyors' Institution.—Mr. H. M. Cautley on "Farm Buildings." 4 p.m.

Institution of Civil Engineers (Special Meeting).—The thirteenth "James Forrest" lecture, by Colonel Rookes E. B. Crompton, C.B., M.Inst.C.E.: "Unsolved Problems in Electrical Engineering." 8 p.m.

Bristol Society of Architects.—Annual General Meeting and Election of Council and Officers. "An Evening with the Lantern." 8 p.m.

Institute of Sanitary Engineers.—Finance Committee. 3 p.m. Organising Committee. 5 p.m. Sessional Meeting. 7 p.m. (Paper by Mr. E. R. Palmer.)

TUESDAY, APRIL 11.

Institution of Civil Engineers.—Paper to be submitted for discussion, "The Maintenance and Strengthening of Early Iron Bridges," by Mr. William Marriott. 8 p.m.

Cardiff, South Wales, and Monmouthshire Architects' Society.—Mr. W. Henry White on "The Absence of a National Style in Modern Town House Architecture," illustrated by lantern slides. 8 p.m.

WEDNESDAY, APRIL 12.

Architectural Association (Discussion Section).—Mr. A. Needham Wilson on "Village Churches." 7.30 p.m.

Edinburgh Architectural Association. — Associates' Annual Business Meeting. 8 p.m.

Quantity Surveyors' Association (Incorporated). — Ordinary General Meeting at the Freemason's Tavern, Great Queen-street, W.C. A paper will be read by Mr. A. G. Cross, F.S.I., entitled "The Practice of our Profession, and Suggested Reforms." 7 p.m.

THURSDAY, APRIL 13.

Society of Antiquaries.—8.30 p.m.

Institution of Mechanical Engineers. — Anniversary Dinner.

Royal Institution.—Professor R. Meldola, F.R.S., on "Synthetic Chemistry," experimental, II. 5 p.m.

Institution of Civil Engineers.—Students' Visit to the Northolt and High Wycombe line of the Great Western and Great Central Railways, in course of construction.

Institution of Electrical Engineers (Ordinary General Meeting at the Institution of Civil Engineers).—Mr. F. Creedy on "The Alternating Current Series Motor"; in connexion with which the address to the Joint Meeting at St. Louis, by Mr. Bion J. Arnold, Past President of the American Institute of Electrical Engineers, will be discussed. 8 p.m.

FRIDAY, APRIL 14.

Royal Institution.—Right Hon. Lord Rayleigh on "The Law of Pressure of Gases below Atmosphere." 9 p.m.

Institution of Mechanical Engineers.—(1) The President, Mr. E. P. Martin, will deliver an address. (2) The Discussion will be concluded on the Steam-engine Research Report, and Professor Capper will reply. 8 p.m.

SATURDAY, APRIL 15.

Royal Institution.—Right Hon. Lord Rayleigh on "Some Controverted Questions of Optics," III. 3 p.m.

Architectural Association.—Sixth Spring Visit, to the Æolian Hall, New Bond-street, by permission of the architect, Mr. Walter Cave; and to No. 2, Hamilton-place, Park-lane, W., by permission of Messrs. Romaine-Walker & Besant.

Royal Sanitary Institute (Arts Theatre, University of Liverpool).—Discussion on "Recent Methods of Rehousing Tenants Dispossessed from Insanitary Property." To be opened by Mr. F. T. Turton, Deputy Surveyor, Liverpool Corporation. 11 a.m.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 11 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 7 0	" " "
Facing Stocks	2 4 0	" " "
Shippers	2 4 0	" " "
Flettons	1 8 0	" at railway dep't.
Red Wire Cuts	1 14 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 4 0	" " "
Do. Bullnose	4 10 0	" " "
Best Stourbridge Fire Bricks	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	7 0	per yard, delivered.
Thames Ballast	5 9	" "
Best Portland Cement	27 0	per ton, "
Best Ground Blue Lias Lime	20 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 5	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "
YORK STONE—*Robin Hood Quality.*		
Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	per ft. cube, "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides (slabs random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

	s. d.	
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube. deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 " "	13 17 6	" "
20 × 10 first quality "	13 0 0	" "
20 × 12 " " "	13 15 0	" "
16 × 8 " " "	7 5 0	" "
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 " "	6 12 6	" "

SLATES (*continued*).

in. in.	£ s. d.	
20 × 10 best Eureka unfading green	15 17 6	per 1000 of 1200 at r. d.
20 × 12 " "	18 7 6	" "
18 × 10 " "	13 5 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 12 6	" "
18 × 10 " "	9 12 6	" "
16 × 8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42	0 per 1000 at rly. depôt.
Hip and Valley tiles	3	7 per doz. " "
Best Brosely tiles	50	0 per 1000 " "
Do. Ornamental tiles	52	6 " " "
Hip and Valley tiles	4	0 per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6 per 1000 " "
Do. Ornamental do	60	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	0 " " "
Best Red or Mottled Staffordshire do. (Peakes)	51	9 per 1000 " "
Do. Ornamental do	54	6 " " "
Hip tiles	4	1 per doz. " "
Valley tiles	3	8 " " "
Best "Rosemary" brand plain tiles	48	0 per 1000 " "
Best Ornamental tiles	50	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	8 " " "
Best "Hartshill" brand plain tiles, sand faced	50	0 per 1000 " "
Do. pressed	47	6 " " "
Do. Ornamental do	50	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	6 " " "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13 10 0	15 0 0
Deals: best 3 by 9	13 0 0	14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 0 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 10 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0
JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in	24 0 0	25 0 0
3 in. by 9 in.	22 0 0	23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Second yellow deals, 3 in by 11 in.	18 15 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	14 0 0
Do. 3 in. by 9 in.	12 10 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	10 0 0	11 0 0
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	40 0 0	upwards.
Oddments	28 0 0	"
Seconds, regular sizes	30 0 0	"
Yellow Pine oddments	25 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0	0 3 6
Small " "	0 2 6	0 2 9
Wainscot Oak Logs, per ft. cube.	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
¾ in. do. do.	0 0 7	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 1 0
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 6
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks, per ft. cube	0 4 0	0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6

WOOD (*continued*).

Prepared Flooring (*continued*)—	Per square. £ s. d.	£ s. d.
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 12 9	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, £ s. d.	or delivered Railway Vans, £ s. d. per ton.
Rolled Steel Joists, ordinary sections	5 15 0 ...	6 15 0
Compound Girders, ordinary sections	7 5 0 ...	8 7 6
Steel Compound Stancheons	9 2 6 ...	10 12 6
Angles, Tees and Channels, ordinary sections	7 7 6 ...	8 7 6
Flitch Plates	7 15 0 ...	8 5 0
Cast Iron Columns and Stanchions including ordinary patterns	6 12 6 ...	7 15 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 0 0 ...	7 10 0
Staffordshire Crown Bars, good merchant quality	7 10 0 ...	8 0 0
Staffordshire "Marked Bars"	9 10 0 ...	—
Mild Steel Bars	8 5 0 ...	8 15 0
Hoop Iron, basis price	8 15 0 ...	9 0 0
" " Galvanized	16 10 0 ...	—
("And upwards, according to size and gauge.)		
Sheet Iron, Black—		
Ordinary sizes to 20 g.	9 0 0 ...	—
" " 24 g.	10 0 0 ...	—
" " 26 g.	11 15 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 10 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	14 0 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	15 10 0 ...	—
" " 22 g. and 24 g.	16 0 0 ...	—
" " 26 g.	17 10 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0 ...	—
" " 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	13 15 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 0 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 0 0 ...	—
" " " 26 g.	13 10 0 ...	—
Cut nails, 3 in. to 6 in.	9 0 0 ...	9 10 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	15 5 0 ...	—
Pipe in coils	15 15 0 ...	—
Soil pipe	18 5 0 ...	—
Compo pipe	18 5 0 ...	—
ZINC—Sheet—		
Vieille Montagne ....ton	30 15 0 ...	—
Silesian	30 10 0 ...	—
COPPER—		
Strong Sheet....per lb.	0 0 10 ...	—
Thin " .... "	0 0 11 ...	—
Copper nails .... "	0 0 10 ...	—
BRASS—		
Strong Sheet.... "	0 0 9½ ...	—
Thin " .... "	0 0 10 ...	—
TIN—English Ingots .... "	0 1 4½ ...	—
SOLDER—Plumbers' .... "	0 0 6½ ...	—
Tinmen's.... "	0 0 8 ...	—
Blowpipe.... "	0 0 9 ...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
" fourths	2d. " "
21 oz. thirds	3¾d. " "
" fourths	3d. " "
26 oz. thirds	4¾d. " "
" fourths	3¾d. " "
32 oz. thirds	5¾d. " "
" fourths	5d. " "
Fluted Sheet, 15 oz.	3¾d. " "
" 21 oz.	4¾d. " "
½ Hartley's Rolled Plate	2d. " "
½ " " "	2¼d. " "
¾ " " "	2½d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 7
" " in barrels	"	0 1 8
" " in drums	"	0 1 10
Boiled " in pipes	"	0 1 9
" " in barrels	"	0 1 10
" " in drums	"	0 2 0
Turpentine, in barrels	"	0 3 6
" in drums	"	0 3 8
Genuine Ground English White Lead	per ton	19 15 0
Red Lead, Dry	"	19 5 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

*** Denotes *accepted*. † Denotes *provisionally accepted*.**

AUDENSHAW (Lancs.).—For erecting fourteen houses. Messrs. J. H. Burton & J. A. Percival, architects, 150A, Stamford-street, Ashton-under-Lyne. Quantities by architects:—

General Trades: F. Woolley, Ashton-under-Lyne* £2,310
Plumbing and Glazing: H. Pike, Hooley Hill* 207

[Twenty-one tenders received for general trades, and seventeen for plumbing and glazing.]

BANGOR.—For new chapel, lecture-room, classrooms, etc., Glanadda, Bangor, N. Wales. Messrs. Richard Davies and Son, architects, Bangor:—

J. M. Jones	£4,823	R. Jones	£3,575
W. Williams	4,674	R. & J. Williams, Upper Bangor*	3,404
E. Jones	4,400		
W. Jones	3,604		

BECKENHAM.—For erecting semi-detached houses in Whitmore-road, Eden Park Building Estate:—

E. P. Balled & Co.	£3,620	Jones & Andrews	£2,770
Kerridge & Shaw	3,600	G. H. Weaver	2,715
W. Saint	3,400	S. L. Grist	2,600
Syme & Duncan	3,350	E. Wallis	2,600
Smith & Wilson	3,133	A. W. Jaggers & Co.	2,450
J. Stewart	3,084		

BECKENHAM.—For erecting two cottages for firemen in Westbourne-road, for the Urban District Council. Mr. J. A. Angell, Surveyor, Beckenham:—

H. Heathfield	£800	Sycamore Works, Ltd.	£692
H. Ockenden	796	W. C. Dawson, Mackenzie-rd., Beckenham*	645
F. Jacob	759	W. H. Baldwin & Co.	629
C. W. Moat	744		
T. Pearce	744		
Gathercole Bros.	719		

BRIDLINGTON.—For erecting a detached residence, for Captain J. C. Blenkarn. Mr. J. Earnshaw, architect, Carlton House, Bridlington:—

J. Sawdon, Bridlington* £530

BRISTOL.—For the erection of two houses at Saint Andrew's Park, Montpelier, for Mr. G. Flook. Mr. W. H. Watkins, architect, 15, Clare-street, Bristol:—

E. Love	£1,846	A. Dowling	£1,550
H. W. & E. I. Neale	1,800	W. & J. Bennett	1,500
R. F. Ridd	1,790	T. R. Lewis	1,415
W. Foster	1,685	A. J. Beaven*	1,299

CAERLEON.—For erecting a pair of villas for Messrs. J. & W. Banner, Museum-street, Caerleon, Newport, Mon. Messrs. J. H. Rennie & Co., architects, Newport. Quantities by the architects:—

J. Hoopar	£2,500	J. Dean & Son	£2,008
E. C. Jordan	2,240	C. H. Reed	2,000
D. W. Pugh	2,190	J. J. Partridge	1,880
R. Clements & Co.	2,090	H. J. Bambury	1,875
J. B. Jenkyn	2,030	J. Charles, Crindan, Newport*	1,849

CAMBRIDGE.—For additions and alterations on the female side at Workhouse Infirmary, Mill-road, for the Guardians. Mr. F. Waters, architect:—

W. Bell & Son	£135	Twinn Bros.	£127
W. G. Mason	130	Oak Building Co., Ltd.	117
Redding & Son	130	Banyard & Son	111
J. Brignell	129	H. J. Flack*	104
Scales & Robins	129		

[All of Cambridge.]

CORK.—For fifty houses for the working classes on part of Ashburton Park site, for the Corporation:—

J. Delany & Co., 24, Henry-street, Cork.... £6,000

CORK.—For erecting offices for the City Analyst and Weights and Measures Departments, Eglington-street, for the Corporation:—

J. Murphy, 24, John-street, Cork £798

CORK.—For additions to and reconstruction of premises, 52, South-mall, Cork, for the Church of Ireland Incorporated Young Men's Association. Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork:—

M. Galvin	£3,761 17 10	S. Hill	£3,350
A. Gaul	3,600	J. Kearns	3,350
D. O'Callaghan	3,575	E. & P. O'Flynn, Watercourse-rd., Cork*	3,160
D. Kelleper	3,450		
E. B. Mc Sweeney & Co.	3,484		

CORK.—For building semi-detached villas and terraces of houses, etc., at Douglas, Glasheen, and Gill Abbey, for Thomas Donovon, Esq., High Sheriff of Cork. Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork:—

P. Murphy, John-street, Cork*..... £6,400

DEAL.—For erecting two small one-story shops in Broad-street, for the Corporation. Mr. T. C. Golder, Borough Surveyor, Deal:—

E. Trevers	£183	R. Gibbons & Sons, New-st., Deal*	£134
A. A. Cavell	169		
A. W. Thompson	163		

EVESHAM.—For 3,700 yds. of 6-in. cast-iron pipes for a new main for the Water Department, for the Town Council. Mr. R. C. Mawson, Borough Surveyor, Town Hall, Evesham:—

	About 154 Tons of Pipes at per ton.	Specials per ton.
Parsons (Brierley Hill), Ltd., The Lays Iron Foundry, Brierley Hill, Staffs.	£4 8 9	£9 12 6

FERNDALE.—For alterations and additions to the Working Men's Conservative Club:—

J. Tellam	£670	H. Lewis, Ferndale*	£535
D. G. Littlejohn	558		

GLOUCESTER.—For alterations and additions to buildings at electric light and refuse destructor works, for the Corporation:—

Boilers.

H. & T. Danks, Ltd., Netherton, near Dudley £1,731 10

Generating Plant.

Phœnix Dynamo Manufacturing Co., Bradford 3,093 0

Condensing Plant.

Mirrlees Watson Co., Ltd., Glasgow 1,669 0

Pipe Work.

E. Le Bas & Co., London 1,545 0

Feed Pump.

British Electric Plant Co., Ltd., Alloa, N.B. . 238 10

GRIMSBY.—For proposed new lavatory for ladies at Town Hall, Grimsby. Mr. H. Gilbert Whyatt, A.M.Inst.C.E., Borough Engineer and Surveyor:—

F. Edwards	£414 14 0	Holme & Richardson	£365 0 0
T. R. Waterman	398 0 0	Wilkinson & Houghton	385 0 0
G. Cook	369 5 0	Gilbert & Kirton, Grimsby*	337 14 6

GUILDFORD.—For sewerage works, Shere and Gomshall, for the Rural District Council. Messrs. Lemon & Blizzard, engineers:—

Potter & Co.	£3,617 0 0	Harrison	£1,639 0 0
Iles	2,692 0 0	Streeter & Co.	1,627 13 1
Cunningham, Forbes, & Co.	2,638 2 2	Fabor & Co.	1,604 7 1
Pedrette & Co.	1,990 0 0	Riley	1,565 17 8
Norris	1,935 0 0	Mann	1,544 0 0
Langley, Hardy, & Johnson	1,895 0 0	Jackson	1,544 0 0
Franks	1,762 0 0	Turner	1,425 17 0
Reyner	1,700 0 0	Jesty & Baker	1,398 11 0
Bell	1,644 0 0	Hewitt Bros.	1,389 18 0
Dean & Co.	1,642 14 11	Catley	1,389 0 0
		Trimm, Dorking*	1,321 0 0
		Osenton & Co.	1,319 0 0

HITCHIN.—For the erection of a house at Norton-road, Garden City, near Hitchin, for Mr. F. H. Sidley. Mr. W. B. Stonebridge, architect, Woburn Sands, Beds.:—

Foster & Co.	£1,562	Miles Bros.	£1,300
S. Redhouse	1,420	T. Raban & Son	1,200
A. Nash	1,329	C. Sinfield	1,147
J. Corby	1,322	A. Collins	997

HOPE.—For erecting a school, for the Flintshire County Council. Mr. S. Evans, County Surveyor and Architect, County-buildings, Mold:—

W. E. Samuel	£4,800 0 0	J. Mayers	£3,838 0 0
A. White & Co.	4,652 13 4	R. Peters	3,750 0 0
Higgins	4,260 0 0	E. J. Mills	3,708 7 8
J. E. & A. Whitehouse	4,207 12 7½	E. O. Probert	3,630 6 0
W. H. Wycherley	4,189 0 0	J. Challiner	3,596 0 0
P. Edwards	3,950 0 0	H. Kelly & Bros.	3,521 0 0
Parker Bros.	3,873 0 0	G. Wright & Sons	3,515 0 0
		E. Blane	3,500 0 0
		R. Williams, Brymbo*	3,300 0 0

HUNSLET.—For extension of Halton sewage works, for the Rural District Council. Messrs. C. H. Marriott, Son, & Shaw, engineers, Church-street-chambers, Dewsbury:—

J. H. Wood, St. Columba-street, Leeds* £1,520

ILFORD.—For erecting a central fire station in Ley-street, for the Urban District Council. Mr. H. Shaw, Engineer and Surveyor, Town Hall, Ilford:—

F. & A. Willmott, Ilford Hill £6,627

ILFORD.—For road works, Wellesley-road, for the Urban District Council. Mr. H. Shaw, Engineer and Surveyor, Town Hall, Ilford:—

B. W. Glenny, Romford..... £99 19 6

INNISHANNON.—For building and completing a bungalow at Innishannon, Co. Cork, for the Rev. Augustus Tabiteau-Herrick. Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork:—

W. O'Connell, Cork* £630

KINETON.—For erecting three cottages, for the King John's Lodge of Oddfellows. Mr. E. G. Holtom, architect, 58, Henley-street, Stratford-on-Avon:—

Fincher & Co.	£995 0 0	G. Euston	£795 0 0
Harris & Son	979 0 0	W. T. Fleming	775 0 0
J. Hirons	896 16 6	F. E. Watson, Southam*	698 0 0
J. F. Booth	848 0 0		

KING'S LANGLEY.—For alterations and additions to Serge Hill, for Mr. H. W. Henderson. Mr. Henry F. Mence, architect, Town Hall Chambers:—

E. Dunham	£850	C. Miskin & Sons, St. Albans*	£720
Boff Bros.	785		

LEYTON.—For stoneware pipes, etc., for the Urban District Council. Mr. W. Dawson, Surveyor, Town Hall, Leyton:—

J. Knowles, 38, King's-road, St. Pancras.—Straight pipes: 4-in., 7d. per yd.; 6-in., 10½d. per yd.; 9-in., 1s. 5½d. per yd.; 12-in., 2s. 5½d. per yd.; 15-in., 4s. 1d. per yd.; 18-in., 6s. 1d. per yd. Special pipes: Interceptor, 4-in., 3s. 6d.; 6-in., 5s. Reverse actions interceptors, 4-in., 4s. 6d.; 6-in., 6s. Single junction taper pipes, 4 ft. of pipe; bends, 3 ft. of pipe. Channel pipe and junctions and bends, one-third less than ordinary. Gully pots, 22s. 6d.

TENDERS.—*Continued on page 395.*

CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tenders, etc., supplied by	Tenders to be Delivered
Taking Down Fences and Building Walls, Barlow-rd.	Levenshulme U.D.C.	J. Jepson, Guardian-chambers, Tiviot Dale, Stockport	April 8
Painting and Papering Out-stations	Water Committee, Warrington Corp.	J. Deas, Water Engineer, Bank House, Sankey-st., Warrington	do.
Re-draining, etc., Grove-lane, Didsbury	Manchester Withington Committee	T. M. Draper, Town Hall, West Didsbury	do.
Street Works, Newton Heath	Manchester Paving, etc., Committee	Surveyor's Office, Paving, etc., Dept., Town Hall, Manchester	do.
Street Works, Clayton	do.	do.	do.
Street Works, Openshaw	do.	do.	do.
Street Works, Moston	do.	do.	do.
Street Works, Moss Side	do.	do.	do.
Heating and Ventilation, Parkhead District Library	Glasgow Corporation	J. R. Rhind, Architect, 67, Hope-street, Glasgow	April 10
Labourers' Cottages (Sixteen Contracts)	Hillsborough R.D.C.	W. Sinclair, Clerk, Poor Law Offices, Lisburn	do.
Granite and Slag	Aylesbury R.D.C.	F. B. Parrott, Clerk, Bourbow-street, Aylesbury	do.
Rebuilding No. 13, St. Stephen's-green, Dublin	Mr. G. Grandy	J. G. Clayton, Surv., N. Brit. & Mercan.-bldgs., Nassau-st., Dublin	do.
Rebuilding No. 24, Dawson-street, Dublin	do.	do.	do.
Nat. Sch., etc., Crossnacreevy, Castlereagh, Co. Down	.....	W. H. Stephens & Sons, Donegall-square N., Belfast	do.
Fireproof Doors to Workshops, Car Depot	Salford Tramways Committee	Tramways Offices, 32, Blackfriars-street, Salford	do.
Timber Fencing & Gates for Depot Exten., Shieldhill	Clyde Navigation Trustees	W. M. Alston, Engineer to Trustees, 16, Robertson-st., Glasgow	do.
Extension to Sewage Tanks	Whitefield District Council	T. Thorp, Architect, Whitefield	do.
Two Semi-detached Houses, Glasbury	.....	J. Gunter, F.S.I., Glasbury	April 11
Scopwick Wesleyan Chapel and School	.....	J. R. Halkes, Architect, 11, Mint-street, Lincoln	do.
Shops, Houses, etc. (Pulling Down and Erecting)	Coventry Co-operative Society, Ltd.	Harrison & Hattrell, Architects, 23, Hertford-street, Coventry	do.
Private Improvement Works	Bootle Corporation	Borough Engineer's Office, Bootle	do.
Cleaning Papering, etc., Premises	Dudley and Dis. W.M. Social Club	Steward of the Club	do.
Road Metalling	Tunbridge Wells Corporation	W. H Maxwell, Borough Engineer, Tunbridge Wells	do.
Granite and Slag	Biggleswade U.D.C.	T. Cockrill, Surveyor, Market-place, Biggleswade	do.
Ballast Waggons	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.	do.
Tyres, Wheels, and Axles	do.	do.	do.
Road Works, Seven Streets	Salford Corporation	Borough Engineer's Office, Town Hall, Salford	do.
Additions to Workhouse, Hemsworth	Hemsworth Guardians	T. H. Richardson, Architect, Hemsworth	do.
Hospital for Consumption	Lanark District Lunacy Board	A. Cullen, Architect, Brandon-chambers, Hamilton	do.
Enlarging County Police-station, Whitstable	Standing Joint Committee	County Architect, 86, Week-street, Maidstone	do.
Council School, Bargoed	Glamorgan C.C.	T. M. Franklin, County Offices, Westgate-street, Cardiff	April 12
19 Dwelling-hses., Lyndhurst-ter., Pallion, Sunderland	N.E.Ry. Co.	W. Bell, Architect, Central Station, Newcastle-on-Tyne	do.
Painting Cemetery Buildings	Twickenham U.D.C.	F. W. Pearce, Surveyor, Town Hall, Twickenham	do.
Additions, etc., Primitive Methodist Ch., Oakengates	.....	Elijah Jones, Architect, 10, Albion-street, Hanley	do.
Disinfectants	Salford Corporation	Superintendent, Cleansing Department, Wilburn-street, Salford	do.
School House at Creavery	.....	Belfast Bank, Antrim	do.
Alterations to Babies' Room, etc., Sheepscar School	Leeds Education Committee	W. S. Braithwaite, Architect, Education Offices, Leeds	do.
Cleaning, Painting, etc., Police-stations	Leeds Corporation	City Engineer, Leeds	April 13
Borehole and Machinery	Hadham R.D.C.	Pollard & Tingle, Engineers, 31, Old Queen-street, Westminster	do.
Carriageways, Penylan-place, etc.	Cardiff Corporation	W. Harpur, Borough Engineer, Town Hall, Cardiff	do.
Footways, Penylan-place, etc.	do.	do.	do.
Painting at Fever Hospital, Ystrad-Rhondda	Rhondda U.D.C.	W. J. Jones, Engineer, Public Offices, Pentre, Rhondda	do.
Shop and Bakery at Ossett	.....	J. Kirk & Sons, Architects, Dewsbury	do.
Plasterer & Slater's Work in Five Houses, Denholme	.....	J. Bottomley, 15, Prince-street, Haworth	do.
Painting, etc., Abercynon Police-station	Glamorgan Quarter Sessions and C.C.	T. M. Franklin, County Offices, Westgate-street, Cardiff	April 14
Twenty-eight Dwelling-houses at Cwmbach	Cwmbach Building Club	Morgan & Elford, Architects, 42, Canon-street, Aberdare	do.
Conveniences, Hunslet Moor, Leeds	Leeds Corporation	City Engineer, Leeds	do.
Making-up Roodsmead-road	Sunbury U.D.C.	H. F. Coales, Surveyor, Council Offices, Sunbury	do.
Class-rooms and Alterations at Truro College	.....	Sampson Hill, Architect, Green-lane, Redruth	do.
House, Kilner's Park, Ulverston	.....	Settle & Brundrit, Architects and Surveyors, Ulverston	do.
Granite and Slag	Wing R.D.C.	M. G. Gurney, Surveyor, Leighton Buzzard	April 15
Police-station, Spennymoor	Durham C.C.	W. Crozier, County Surveyor, Shire Hall, Durham	do.
20,000 tons of Road Metal	Bradford Corporation	J. H. Cox, City Surveyor, Town Hall, Bradford	do.
Road Materials	Hoyland Nether U.D.C.	H. G. Keywood, Surveyor, Town Hall, Hoyland, near Barnsley	do.
Road Materials	Worsborough U.D.C.	J. Whitaker, Sur., Saville House, Worsbro' Bridge, nr. Barnsley	do.
135 Dwelling-houses, etc., Darranlas, Mountain Ash	Napier's Building Club	Morgan & Elford, Architects, 1, Jeffrey-street, Mountain Ash	do.
1,400 yds. of Stone	Southborough U.D.C.	P. Hanmer, Clerk, Council Offices, Southborough	do.
300 tons of Granite	do.	do.	do.
Piggery, Creegbrose, near Chasewater	Rt. Hon. Viscount Falmouth	G. Oliver, Creegbrose	do.
1,300 yds. of Earthenware Pipe Sewer	Ramsbottom U.D.C.	J. Diggle & Son, Engineers, Hind Hill-street, Heywood	do.
Extension, etc., of Pier, Quay, etc., Cork	Cork C.C.	E. Callanan, Secretary, County Council, Court-house, Cork	do.
Exten., Hos. Bldgs., Muirhead, Linwood-rd., Johnstone	Joint Com. Johnstone Hospital	J. L. Cowan, Architect, 136, Wellington-street, Glasgow	April 17
Heating and Machinery	do.	A. Leitch, Engineer, 40, St. Enoch-square, Glasgow	do.
Sewage Disposal Works	do.	R. F. Millar, C.E., 109, Bath-street, Glasgow	do.
Storage Reservoir, Foffanyreagh, near Newcastle	Portadown & Banbdge. Jt. Water Bd.	R. H. Dorman, Court House, Armagh	do.
Caretaker's Residence, Foffanyreagh	do.	W. Wilson, Clerk, Town Hall, Portadown	do.
Workshop, etc., Halifax	.....	Jackson & Fox, Architects, 7, Rawson-street, Halifax	do.
Plant for Power Station	Cardiff Corporation	A. Ellis, Borough Elect. Engr., Central Office, The Hayes, Cardiff	do.
Painting at Municipal Cottages, Broad Eye, etc.	Stafford Corporation	W. Blackshaw, Borough Hall, Stafford	do.
Scavenging, etc., and Team Labour	Bracebridge U.D.C.	T. Brown, Surveyor, Bracebridge, Lincolnshire	do.
Stores	Bristol Docks Committee	W. W. Squire, Docks Engineer, Cumberland Basin, Bristol	do.
Londonderry-lane Sewer	Smethwick Corporation	C. J. Fox Allin, Borough Surveyor, Town Hall, Smethwick	do.
West Smethwick Sewerage	do.	do.	do
High Park Road Culvert	do.	do.	do.
Stores	do.	do.	do.
Fire-station, Ramsgate	Corporation	T. G. Taylor, Borough Engineer, Albion House, Ramsgate	do.
Swimming Baths in Cotton Mill-lane	St. Albans Corporation	City Surveyor, Victoria-street, St. Albans	do.
Three Houses at Fulford, Yorks	Mr. G. Wood	A. H. Everist, Architect and Surveyor, 8, New-street, York	do.
Institute at Gorseinon, Swansea	Gorseinon, etc., Trade & Lab. Council	C. T. Ruthen, Arch., Bank-chambers, Heathfield-street, Swansea	do.
*Road-making and Sewerage Works	Hornsey Town Council	Council's Engineer, 99, Southwood-lane, Highgate	do.
*Erection of Public Library	Erith U.D.C.	W. Egerton, Architect, 12, Queen's-road, Erith	do.
*Carburetted Water Gas Plant Buildings	Coventry Corporation Gas Com.	Engineer, Gas Works, Coventry	do.
Stone and Flints	Sheppey R.D.C.	J. Copland, Clerk, Sheerness	April 18
Low-sided Waggons	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.	do.
Two Road Motors	Cardiff Corporation	J. Woosey, Town Hall, Cardiff	do.
English Baptist Church, Tonyrefail	.....	G. Hughes, Gilfach-road, Tonyrefail	do.
Sewerage and Sewage Disposal Works	Kenilworth U.D.C.	Willcox & Raikes, Engineers, 63, Temple-row, Birmingham	do.
Church, Kinnegad, Co. Westmeath	Rev. W. Bracken, P.P.	Hague & McNamara, Architects, 50, Dawson-street, Dublin	do.
*Ascot & Clarence Rds., Doncaster-gdns., etc., 2nd Sec.	Tottenham U.D.C.	Engr. to the Council, Coombes Croft Hse., 712, High-rd., Tottenham	do.
Stores	Dublin, Wicklow, & Wexford Ry. Co.	M. F. Keogh, Secretary, Westland-row, Dublin	April 19
*Repairing Tar-paving, S.W. Fever Hospital	Metropolitan Asylums Board	Office of Board, Embankment, E.C.	do.
*Relaying Floors, Fever Hospital, Tooting	do.	do.	do.
*Painting Works, Grove Fever Hospital, Tooting, S.W.	do.	do.	do.
Stores	Wallasey U.D.C.	Gas and Water Engineer's Office, Dock-road, Seacombe	April 20
Vicarage, etc., Penponds, near Redruth	.....	Sampson Hill, Architect, Green-lane, Redruth	do.
Temperance Hall, Askrigg	.....	J. Skidmore, Secretary, Askrigg	April 21
Taking Down and Re-erecting Little Mill Bridge	Alnwick R.D.C.	Office of Council, Tenkle-street, Alnwick	April 22
Repair of Bleddfa Church, Radnorshire	.....	Bleddfa Rectory	April 24
Sleeper Blocks (10 in. by 10 in.)	G.N.Ry. Co. (Ireland)	T. Morrison, Secretary, Amiens-street Terminus, Dublin	do.
Sleeper Blocks (9 ft. by 12 in. by 12 ins.)	do.	do.	do.
Manager's Hse., Weight Office, etc., Askam-in-Furness	Dalton-in-Furness U.D.C.	Council's-buildings, Station-road, Dalton-in-Furness	do.
Triple-expansion Pumping Engine, etc.	Colchester Corporation	C. E. Bland, Waterworks Superintendent, Town Hall, Colchester	do.
*Conveniences and Caretaker's Lodge, Morton-road, N.	Islington Borough Council	Borough Engineer, Town Hall, Upper-street, N.	April 25
Deepwell Pumping Engine, etc., Stroud Green Well	Croydon Corporation	G. F. Carter, Borough Engineer, Town Hall, Croydon	April 26
One 500-kw. Steam Generator	Stockport Gas and Electricity Com.	A. J. H. Carter, Electricity Works, Millgate, Stockport	do.
*Erection of Public Library	Borough of Southend-on-Sea	Town Clerk, Town Clerk's Office, Southend-on-Sea	April 27
Stables, Tyne-road East, Gateshead	Gateshead Corporation	N. P. Pattinson, Borough Surveyor, Town Hall, Gateshead	do.
*Water Scheme, Llandebie and Ammanford	Llandilo-fawr R.D.C., etc.	H. Herbert, Engineer, Brynmarlais, Ammanford	April 28

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Waterworks, Kanturk	Kanturk R.D.C.	T. Guiney, Clerk, Board-room, Workhouse, Kanturk, Co. Cork	May 2
*Making up Dover-road	Wanstead U.D.C.	Council's Surveyor, Wanstead, N.E.	May 3
Farnborough, new Chelsfield and Orpington Sewers	Bromley R.D.C.	A. Williams & Sons, Engineers, 14, Victoria-street, Westminster	May 5
Additions, etc., to Church and School, Dromara	Com. of Second Presbyterian Church	Hobart & Heron, Architects, Scottish Provident-bldgs., Belfast	No date.
Block of Dwelling Houses, Clowney-street, Belfast	Ashington Indust. Co-operative Soc.	W. J. Moore, Architect, Royal-chambers, 35, Royal-av., Belfast	do.
Premises, Morpeth	Garth-Merthyr Colliery	Liddle & Brown, Architects, Prudential-bldgs., Mosley-st., Nwct.-T.	do.
Enlarging Main Level Heading and Building Walls	Horley District Gas Co.	Mr. Wardlaw, Colliery Manager, Maesteg	do.
Baptist Church, Eastleigh, Hants	do.	J. Wills & Sons, Architects, Victoria-chambers, Derby	do.
Excavating Ground and Laying Gas Mains	do.	Engineer, Gas Offices, Station-road, Horley, Surrey	do.
Excavating Ground for Steel Tank	do.	do.	do.
Concrete Work in Connexion with Steel Tank	do.	do.	do.
*Erection of Schools	Stockport Education Committee	A. Lawton, St. Petersgate, Stockport	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Clerk of Works	Henley & Wallingford Jt. Hos. Bd.	2*l.* 10s. per week	April 12
*Depot Foreman and Storekeeper	Hampstead Borough Council	2*l.* 2s. per week	April 14
*Quantity Surveyor	Brentford Union	See advertisement in this issue	April 25

Those marked with an (*) are advertised in this number. *Competitions*, xvi. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvi. xvii.

TENDERS—*Continued from page* 393.

LLANTWIT MAJOR.—For erecting a Congregational chapel. Messrs. Cook & Edwards, architects, Bridgend :—

P. Gaylard	£1,586 0 0	Knox & Wells	£1,379 0 0
Price Bros.	1,498 0 0	J. Chatterton, Llantwit Major*	1,373 13 3
Lloyd & Tape	1,466 8 0	E. Preece	1,340 5 0
W. A. Cooksley	1,400 0 0	R. Jones	1,313 6 6
J. Lloyd	1,389 0 0		

LLWYNYPIA.—For erecting a power-station at Llwynypia, for the Glamorgan Coal Co., Ltd. Messrs. A. O. Evans, Williams, & Evans, architects and engineers, Pontypridd :—

C. Jenkins & Son	£6,293 0 0	D. Davies	£5,204 0 0
W. H. Cooksley	6,042 0 0	J. James	5,084 0 0
W. E. Willis	5,653 0 0	A. Richards	4,995 0 0
J. Edwards	5,431 17 5	E. R. Evans & Bros.	4,600 0 0
E. Turner & Sons	5,266 0 0	Knox & Wells, Cardiff*	4,487 0 0
Barnes, Chaplin, & Co.	5,216 0 0		

LONDON.—For the erection of stables, Greenmore Wharf, Bankside, S.E., for the Southwark Borough Council. Mr. A. Harrison, Borough Engineer, Town Hall, Walworth-road, S.E. :—

Johnson & Co.	£6,690 0 0	W. Wallis	£5,884 0 0
R. & F. Evans	6,417 0 0	Wisdom Bros.	5,870 0 0
C. Ford	6,374 0 0	G. Neal	5,856 0 0
Burman & Sons	6,290 0 0	Holliday & Greenwood, Ltd.	5,816 0 0
J. Hoare & Son	5,982 0 0	G. Parker	5,790 0 0
J. Marsland & Sons	5,979 0 0	F. & H. F. Higgs, Herne Hill*	5,790 0 0
W. J. Renshaw	5,891 0 0	A. N. Coles	5,594 18 8

LONDON. — For the construction of sewers in Devonshire-square and Queen-street-place, for the Corporation of the City of London :—

C. W. Killingback & Co. £2,030

LONDON BOARD OF EDUCATION TENDERS.

Woolwich, Deansfield-road (Heating Apparatus).

J. Grundy	£960 0	R. H. & J. Pearson, Ltd.	£765 0
Stevens & Sons	825 0	J. & F. May	700 10
Mackenzie & Moncur, Ltd.	791 0	J. Defries & Sons, Ltd., 147, Houndsditch*	691 15
G. N. Haden & Sons	791 0		

FOR PAINTING SCHOOLS.

Bethnal Green, N.E., Olga-street (Old and New Portions).

W. Silk & Son	£221 0	A. J. Sheffield	£175 0
Vigor & Co.	215 0	Barrett & Power	168 0
Woollaston Bros.	211 0	A. W. Derby, 60, Mayfair-avenue, Ilford*	154 0
J. Haydon & Sons	202 8		
G. Munday & Sons	190 0		

City of London, Greystoke-place.

T. L. Green	£145	W. Densham & Sons	£77
G. Foxley	100	W. Hornett, 17, Houghton-street, Strand*	69
Martin, Wells, & Co., Ltd	99		
J. R. Sims	95		

Deptford, Creek-road (Old Portion and J.M.).

S. Musgrove	£178 7	G. Munday & Sons	£140 0
T. D. Leng	156 0	W. Hayter & Son	139 10
R. Woollaston & Co.	154 10	E. Proctor & Son	138 0
C. G. Jones	148 18	H. Groves, Stockwell-street, Greenwich*	134 0
W. J. Howie	143 0		

Dulwich, Bellenden-road.

H. Line	£199 0	Maxwell Bros., Ltd.	£119 0
H. L. Holloway	181 0	Holliday & Greenwood, Ltd.	105 0
W. Downs	180 0	E. Proctor & Son, 326, High-street, Plumstead*	90 0
H. Leney & Son	156 0		
J. F. Ford	147 0		
J. & C. Bowyer	146 0		
W. Hayter & Son	134 10		
W. Banks	124 15		

Fulham, Sherbrooke-road.

C. Gurling	£369 10 0	Lathey Bros.	£257 0 0
R. S. Ronald	340 0 0	E. B. Tucker	199 0 0
Spencer, Santo, & Co., Ltd.	311 0 0	W. R. & A. Hide, 2A, Brackenbury-road, Hammersmith*	183 15 0
J. & M. Patrick	299 0 0		
Lole & Co.	268 12 6		
J. Garrett & Son	264 0 0		

Islington, E., Ecclesbourne-road.

Patman & Fotheringham, Ltd.	£270	A. Porter	£203
Marchant & Hirst	266	G. Neal	200
R. Woollaston & Co.	257	Woollaston Bros.	198
McCormick & Sons	236	J. Grover & Son, Wilton Works, Islington*	198
H. Bouneau	216		

Islington, W., Caledonian-road.

Patman & Fotheringham, Ltd.	£182 0	H. Bonneau	£154 0
A. Porter	174 0	W. Martin	150 0
G. S. S. Williams & Son	169 0	G. Kirby	149 0
F. W. Harris & Co., Ltd.	155 0	Stevens Bros.	142 0
		J. Stewart, 174, West Green-rd.*	108 16

Kensington, S., Allen-street.

Spencer, Santo, & Co., Ltd.	£87 0	J. Peattie	£64 0
G. Neal	80 0	W. R. & A. Hide, 2A, Brackenbury-road, Hammersmith*	52 10
W. Brown & Sons	78 10		
J. & M. Patrick	75 0		

Lewisham, Haseltine-road.

W. J. Howie	£208 0 0	H. Groves	£165 0 0
W. Banks	189 10 6	H. Leney & Son	150 0 0
W. Hayter & Son	184 14 0	C. G. Jones, 109, Ewart-road, Forest Hill*	144 10 0
J. & C. Bowyer	175 0 0		

Marylebone, W., Barrett-street.

T. Cruwys	£228 16	Holloway Bros. (London), Ltd.	£119 0
Bristow & Eatwell	153 0	W. Densham & Sons	97 0
G. S. S. Williams & Son	142 0	F. T. Chinchen & Co., Kensal Green*	94 0
G. Foxley	142 0		
G. Neal	140 0		
J. Peattie	131 0		
F. Chidley & Co., Ltd.	125 0		

St. Pancras, W., Princess-road.

T. Cruwys	£240 0	F. T. Chinchen & Co.	£119 10
W. Hayter & Son	164 10	W. Densham & Sons, 17, Circus-road, St. John's Wood*	119 0
G. Foxley	164 0		
Stevens Bros.	134 0		
F. Chidley & Co., Ltd.	126 0		
W. Chappell	120 0		

Walworth, Sandford-row.

J. W. Leonard	£225 17	W. V. Goad	£150 0
H. J. Williams	192 0	G. Brittain	148 0
Rice & Son	154 0	E. Triggs, 92, The Chase, Clapham*	107 0
W. Sayer & Son	151 5		

Wandsworth, Eltringham-street.

W. & C. Brown	£395	R. S. Ronald	£230
R. A. Jewell	274	J. Garrett & Son	221
J. Carmichael	255	E. Flood	210
Hudson Bros.	247	E. B. Tucker	187
Martin, Wells, & Co., Ltd.	240	E. Triggs, 92, The Chase, Clapham*	169
E. P. Bulled & Co.	235		

Wandsworth, Ensham-street (Iron Buildings).

W. Johnson & Co., Ltd.	£79 0	J. Garrett & Son.	£64 0
J. W. Leonard	76 10	W. & C. Brown	64 0
R. S. Ronald	72 10	H. Leney & Son	61 10
W. Read	69 18	J. & C. Bowyer, Upper Norwood*	58 10

Westminster, Horseferry-road.

W. King & Son	£158 0	G. Brittain	£118 0
Holloway Bros. (London), Ltd.	129 0	J. R. Sims	106 0
Lathey Bros.	127 0	W. Hornett	102 10
J. F. Ford	119 0	Rice & Son, 15, Stockwell-road*	102 0

LONDON.—For electric lighting and heating of Museum-buildings, Walworth-road, Southwark, S.E., for the Southwark Borough Council :—

—	Heating.	Lighting.	Ventilating.
	£ s. d.	£ s. d.	£ s. d.
Stubbs, Son, & Hall	208 13 6	69 18 6	—
Dawson & Co., Ltd.	153 0 0	—	—
J. Wilson	—	75 5 0	115 10 0
Holmes & Cooper	—	59 10 0	87 0 0
White & Co.	105 0 0	—§	—§
G. & H. Turner	—	58 10 0	—
W. Winn, Borough	132 0 0	52 16 0*	92 0 0*
Wenham & Waters, Ltd.	103 0 0	77 0 0	99 0 0
Lea, Son, & Co.	98 10 0	64 10 0	99 0 0
Brightside Foundry, etc., Co.	99 0 0	—	—
Ewart & Son, Ltd.	385 0 0‡	175 0 0	—
G. & E. Bradley, Highbury	83 0 0*	—	—
Jones & Sons	84 15 0	—	—

‡ Including fans. § £161 for both.

LONDON.—For additions to stores and workshops at the Western Fever Hospital, Seagrave-road, Fulham, S.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

A. G. Crisp	£1 055 0 0	A. Faulks	£879 10 0
R. & E. Evans	973 0 0	W. Taylor & Co.	847 8 4
Aldridge & Son	965 0 0	J. Christie	837 0 0
E. Wall	950 0 0	C. A. Cruse	809 0 0
T. Cole	907 0 0	J. F. Holliday	785 0 0
Cowley & Drake	880 0 0	The Sycamore Works, Ltd., Wimbledon*	776 0 0

LONDON.—For the construction of an underground convenience near Guildhall-buildings, for the Corporation of the City of London :—

Davis & Bennett* £2,800

LONDON.—For alterations and additions to the Medical Superintendent's house at Infirmary, East Dulwich-grove, for the Southwark Guardians. Mr. G. D. Stevenson, architect, 13 and 14, King-street, E.C. :—

E. Mills, Siebert Works, Westcombe-hill, S.E. £232

MARGATE.—For laying, etc., 1,070 yds. of mains at Bridge, Patrixbourne, and Goodnestone, for the Corporation. Mr. Neil McK. Barron, C.E., 15, Cecil-square, Margate :—

A. H. Ball & Co., Bleak House, Maidstone £127 1 1

MERTHYR TYDFIL.—For erecting two ward pavilions, observation pavilion, administrative block, laundry, etc., Mardy Estate, Twynyrodyn, for the Urban District Council. Mr. T. Fletcher Harvey, Engineer and surveyor, Town Hall, Merthyr Tydfil. Quantities by Mr. E. A. Johnson, F.R.I.B.A., Merthyr Tydfil :—

E. Williams	£18,221 10 0	W. Watts	£15,226 13 11
J. Allen	17,500 0 0	R. Jones	14,900 0 0
Lattey & Co.	17,216 1 2	D. Davies	14,450 0 0
Jones Bros.	17,215 15 6	W. Bowers	13,980 0 0
L. Davies	16,935 0 0	J. G. Thomas	13,900 0 0
H. Brown	16,923 19 6	J. Linton, Newport, Mon.*	13,403 0 0
E. Thomas	16,498 10 0		
S. Shepton	15,900 0 0		
J. Lewis	15,827 0 0		

MOLD (Flintshire).—For erecting County Office extension, Mold, for the Flintshire County Council. Mr. S. Evans, County Surveyor and Architect, County-buildings, Mold :—

R. Jones	£3,520 0 0	J. Mayers & Sons	£2,647 0 0
E. O. Probert	3,049 10 6	G. Wright & Sons	2,490 0 0
P. Edwards	2,995 0 0	T. Roberts, Mold*	2,234 8 6
M. S. Rogers.	2,961 8 0		
R. Williams	2,693 19 4		
Parker Bros.	2,675 0 0		

MORLEY.—For alterations and additions to mill premises, Grove Mills, for Messrs. David Bradley, Ltd. Messrs. T. A. Buttery & S. B. Birds, architects, Queen-street, Morley. Quantities by the architects:—
I. Clegg & Sons, Wesley-street, Morley* £588

NELSON.—For erecting new club premises, for the Balfour Constitutional Club. Messrs. A. O. Evans, Williams, & Evans, architects, Pontypridd. Quantities by architects:—

W. & D Thomas	£2,892 0 0	E. R. Evans & Bros.....	£1,650 0 0
J. Lewis	1,828 0 0	A. Rusbatch & Co.	1,600 19 7
A. Richards..	1,800 0 0	M. Harding, Caerphilly *	1,490 0 0
J. Thomas ..	1,748 0 0		
D. G. Littlejohns	1,715 0 0		

NEWTON ABBOT. — For alterations to Downe House, Broadhampton, for Mr. W. B. Mann. Mr. R. Watson, architect, Newton Abbot:—
W. Atwill, Broadhampton, near Totnes* £355

OLDBURY.—For 290 yds. of wrought-iron unclimbable fencing at Warley Sewage Pumping Station, for the Urban District Council. Mr. J. T. Eayrs, engineer, 39, Corporation-street, Birmingham:—
J. Elwell, Sherborne-street, Birmingham*.. £145

RADLETT (Herts).—For the erection of two detached residences on the Radlett Park Estate, for Mr. Horace Slade. Mr. Henry F. Mence, architect, Town Hall Chambers, St. Albans:—

Vail & Williamson	£1,895 10	Dumpleton	£1,638 0
Goodchild & Jeffery.....	1,860 0	E. Dunham, St. Albans*	1,636 0

RISHWORTH.—For constructing a concrete service tank for 56,000 gallons on Rishworth Moor, for the Urban District Council. Messrs. R. Horsfall & Son, surveyors and architects, 22A, Commercial-street, Halifax:—

G. Greenwood & Son	£561 11 6	J. & R. A. Crawshaw	£419 13 0
Crawshaw Bros.	495 0 0	Bancroft & Son, Halifax*	417 5 0
J. E. Dyson ..	483 4 0	R. Parker	412 1 9
Hill & White ..	475 1 6	J. W. & E. Sugden	411 0 0
J. Cochcroft ..	470 11 9		
B. Riley	450 0 0		
Ferro Concrete Co.	430 0 0		

SANDERSTEAD (Surrey).—For the erection of a detached house in Mayfield-road, Sanderstead, for Mr. J. E. Tuke. Messrs. Pepler & Allen, architects, 3, George-street, Croydon:—

J. R. Bex	£725	Grace & Marsh	£597
W. Potter.....	699	Worsfold & Sons* ..	567

SUTTON (Surrey).—For cleaning and painting works at the Downs School, Banstead-road, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

E. Streather	£600 0	Langdon & Clark	£340 12
Jones & Andrews	492 0	Wontner & Co., Ltd.....	334 0
W. H. Jenner ..	488 6	W. Dudley	329 15
Sycamore Works, Ltd.....	468 18	S. T. Wright	300 0
J. Kirkaldy & Son	450 0	J. S. Fenn	299 10
H. Kent	439 0	E. Proctor & Son	280 0
J. F. Holliday ..	418 0	J. J. Richards ..	275 0
E. Wall	398 0	T. Cole, 125, Offord-road, Barnsbury, N.*	235 0
J. B. Potter	372 0		
Enness Bros.	365 0		

SWINDON.—For the erection of two pairs of cottages, stabling and outbuildings (for small holdings), Lydiard Millicent, near Swindon, for Mr. H. Carter. Messrs. W. Drew & Sons, architects, Regent-circus, Swindon. Quantities by the architects:—

J. Williams ..	£1,597 0 0	J. Ponting ..	£1,349 10 0
Tydeman Bros.	1,568 7 6	H. & C. Spackman, Swindon*.....	1,251 0 0
H. Flewelling	1,517 18 6		
J. G. Norman	1,398 10 0		

TETBURY.—For alterations and additions to the workhouse, for the Guardians. Mr. V. A. Lawson, architect, 17, Rowcroft, Stroud:—

Forse & Sons ..	£4,898 0	G. Shaylor & Sons	£4,150 0
A. King & Son	4,887 0	W. Drew.....	3,850 0
Bowers & Co...	4,470 0	Wall & Hook ..	3,848 0
Estcourt	4,451 0	A. S. Cooke....	3,790 6
Saunders & Sons, Ltd.....	4,280 0	Orchard & Peer	3,730 0
W. S. Jenkins..	4,273 13	A. J. Colborne ..	3,708 18
Draper & Wallington.....	4,157 0	G. Drew, Cirencester*	3,700 0

TORQUAY.—For erecting a residence at Livermead, for Mr. B. W. Stedham. Messrs. J. W. Rowell, Sons, & Locke, architects, 2, St. Paul's-road, Newton Abbot:—

J W. McKellar	£1,598 0 0	Parker Bros.	£1,099 0 0
Yeo & Sons ..	1,356 0 0	T. Vanstone..	1,030 0 0
W. E. Blake..	1,308 0 0	R. G. Narracott	1,006 17 0
Bovey & Sons	1,249 0 0	Tucker & Sons	964 9 2
H. Drew	1,170 0 0	H. C. Goss, Torquay* ..	926 0 0
J. Mumford..	1,165 0 0		
A. N. Coles ..	1,104 0 0		

TROUTBECK.—For the erection of two stone bridges, of 20 ft. and 30 ft. spans respectively, across Glencoyne and Aira Becks, in the parishes of Greystoke and Patterdale (within eight miles of Troutbeck Station on the Cockermouth, Keswick, and Penrith Railway), for the Highways and Bridges Committees of Cumberland and Westmorland County Councils. Mr. G. J. Bell, County Surveyor, The Courts, Carlisle:—
Aira Bridge.
T. Tilfer, Langholm, N.B. £614
Glencoyne Bridge.
T. Tilfer, Langholm, N.B. 396

WALLSEND.—For erecting a mortuary and urinal in Portugal-place, for the Corporation. Mr. G. Hollings, Borough Surveyor, Corporation Offices, Wallsend:—
J. Lant, Walker-road, Newcastle-on-Tyne.. £429

WOBURN SANDS.—For alterations, additions, and repairs to "Woodlands," Woburn Sands, for Miss Pain. Mr. W. B. Stonebridge, architect, Woburn Sands, Beds:—

G. B. Tutt	£347	J. Corby & Son	£292
A. W. Nash	346	C. Negus	285
W. T. Sharpe	301	Miles Bros.	270

WORTHING.—For making-up, kerbing, and paving of footways in Church-walk, for the Town Council:—

J. A. East....	£282 10 10	W. J. East, Wenban-road*.....	£255 19 0
A. Crane	278 14 2		
E. H. King ..	266 0 0		

WREXHAM.—For the construction of sewage disposal works, Cefn, near Ruabon, for the Rural District Council. Mr. J. Price Evans, C.E., Argyle-chambers, Wrexham:—

E. Buckley.....	£11,994 18 4
E. Taylor	11,676 4 2
J. H. Billings & Co.....	10,571 0 0
G. Read & Son	10,455 18 0
Jenkins & Jones	10,250 8 11
R. Williams	9,708 19 9
J. T. Jones, Cefn, Ruabon* ..	9,135 0 0

YOUGHAL.—For additions and improvements at Provincial Bank, Youghal, Co. Cork. Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork:—
D. Creedon, Fermoy, Co. Cork*.... £1,437 10

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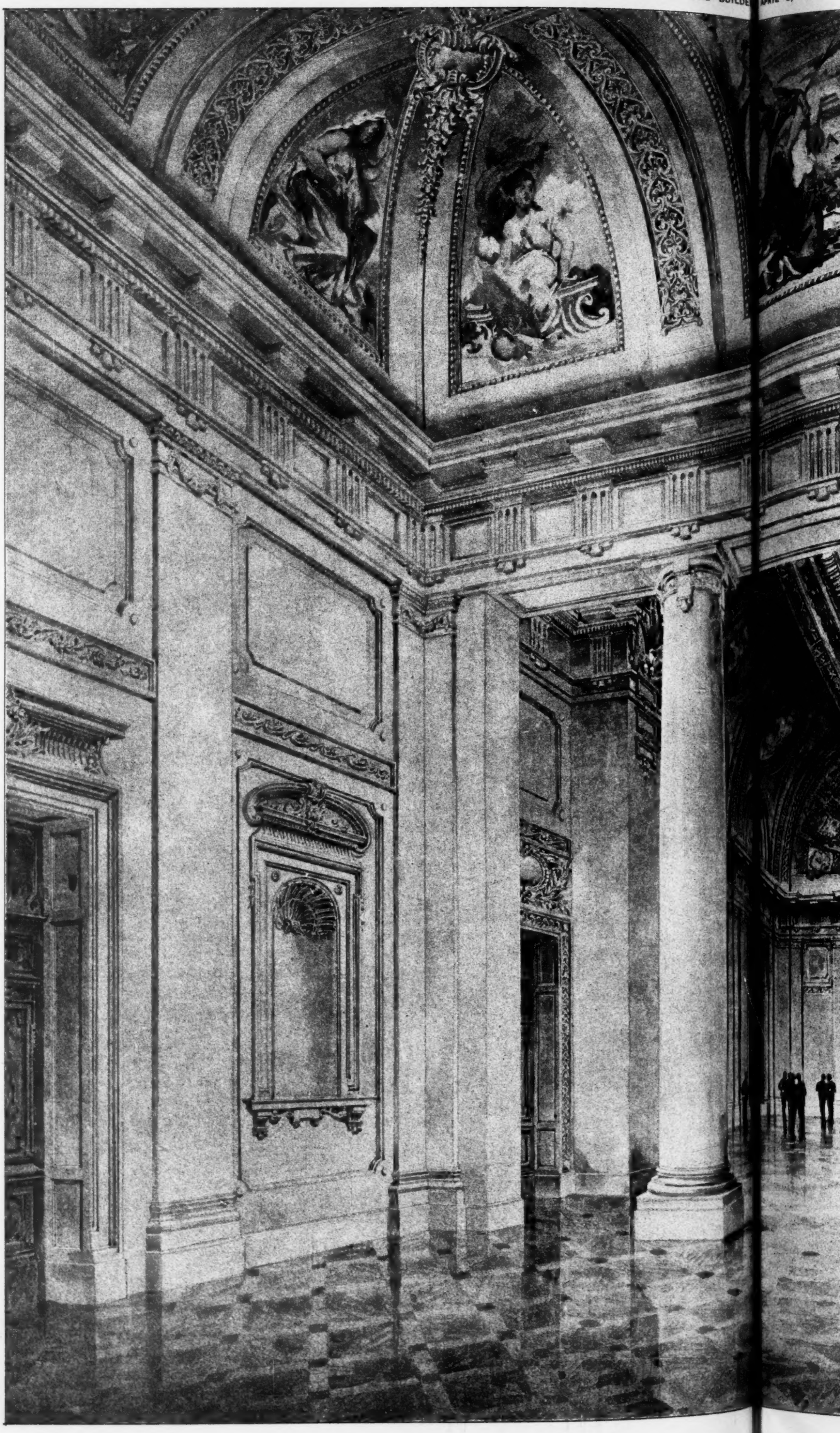

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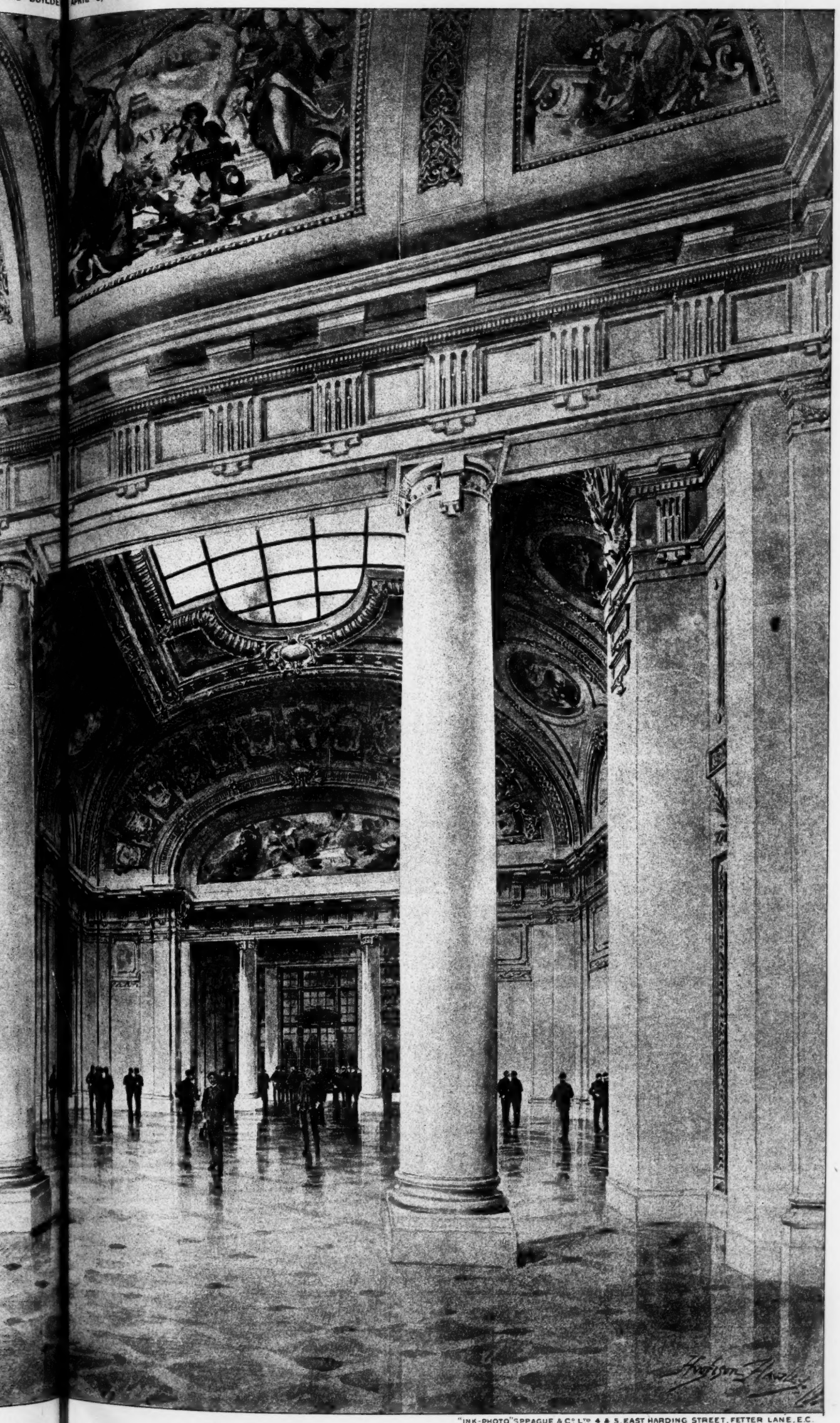

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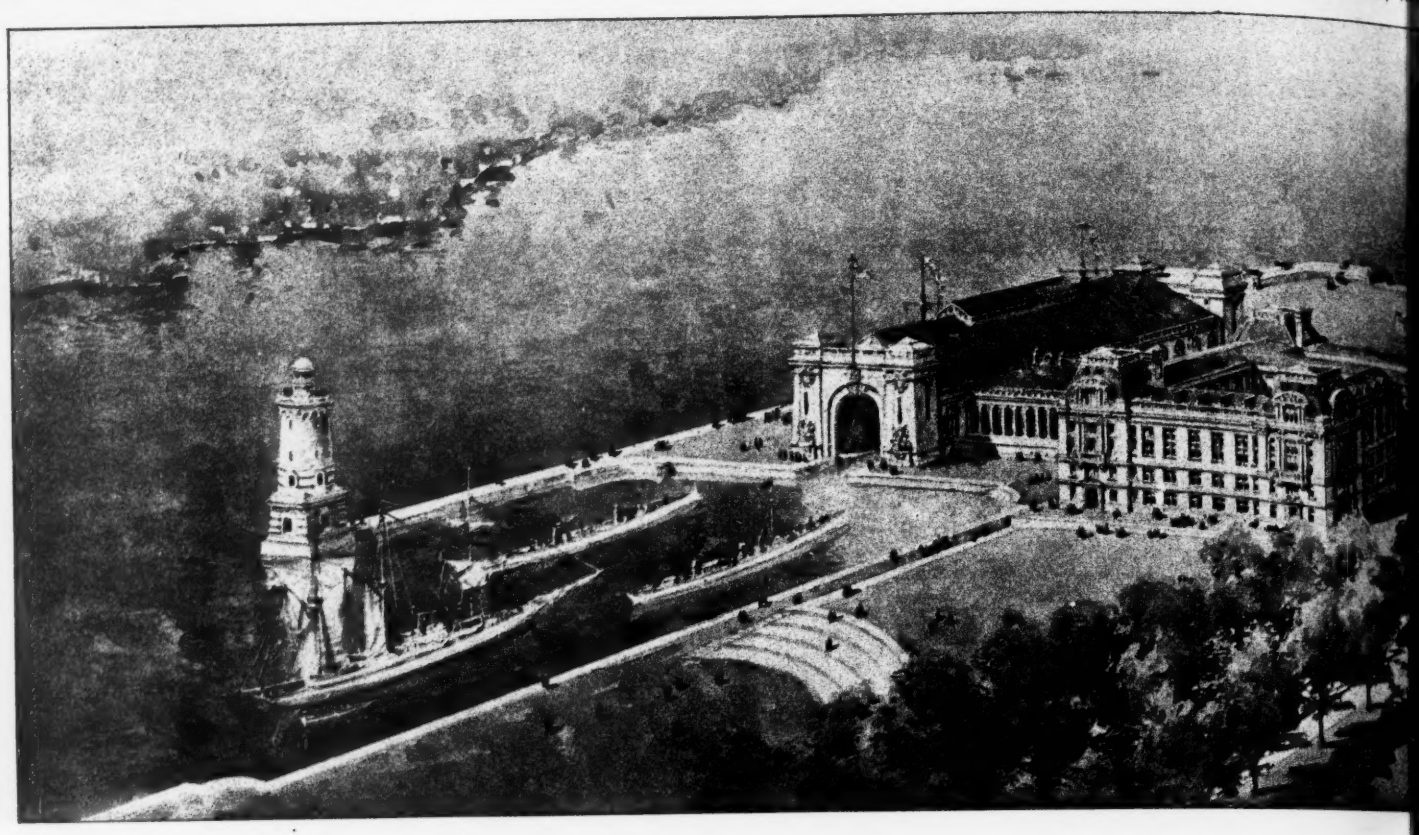

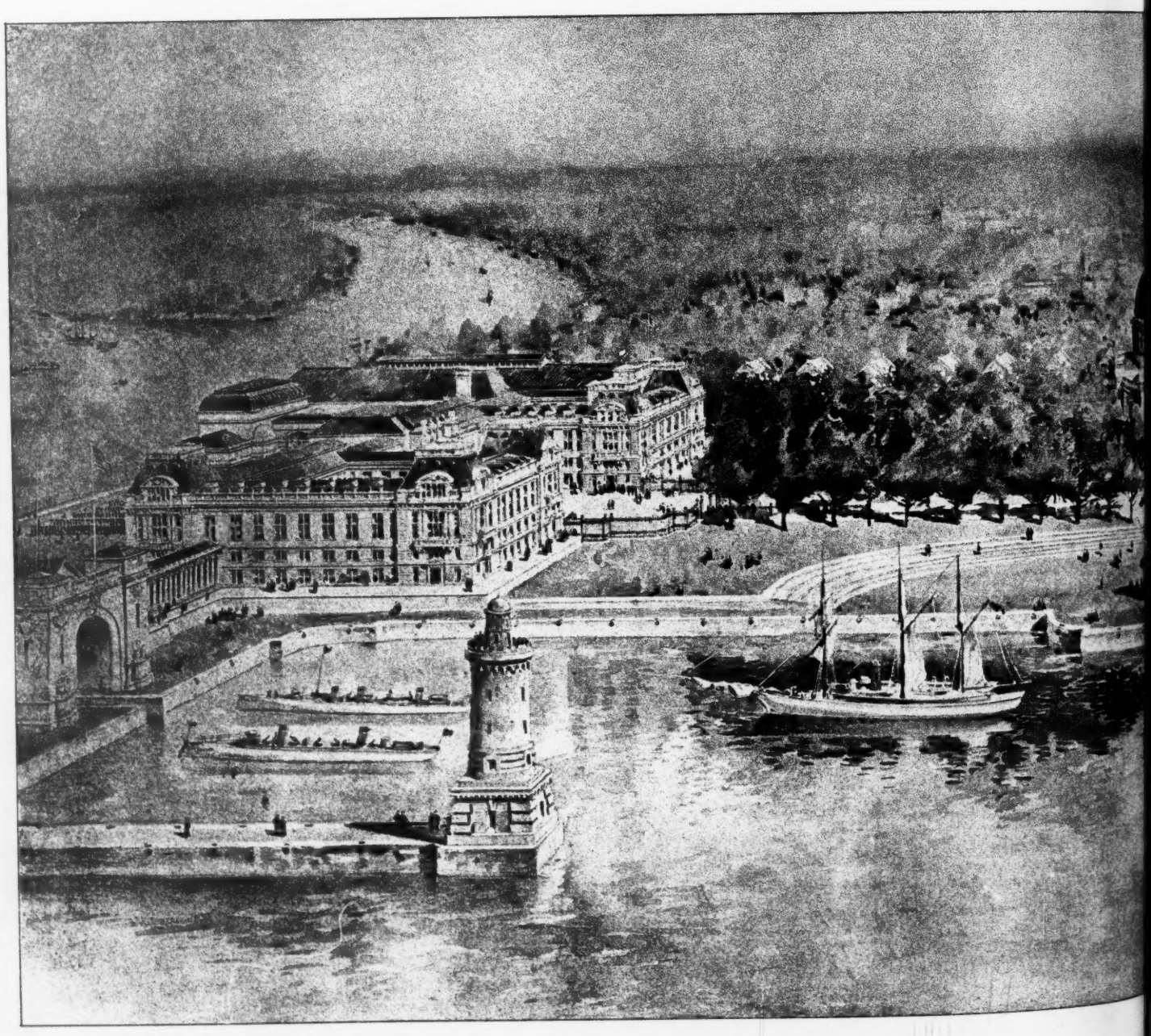

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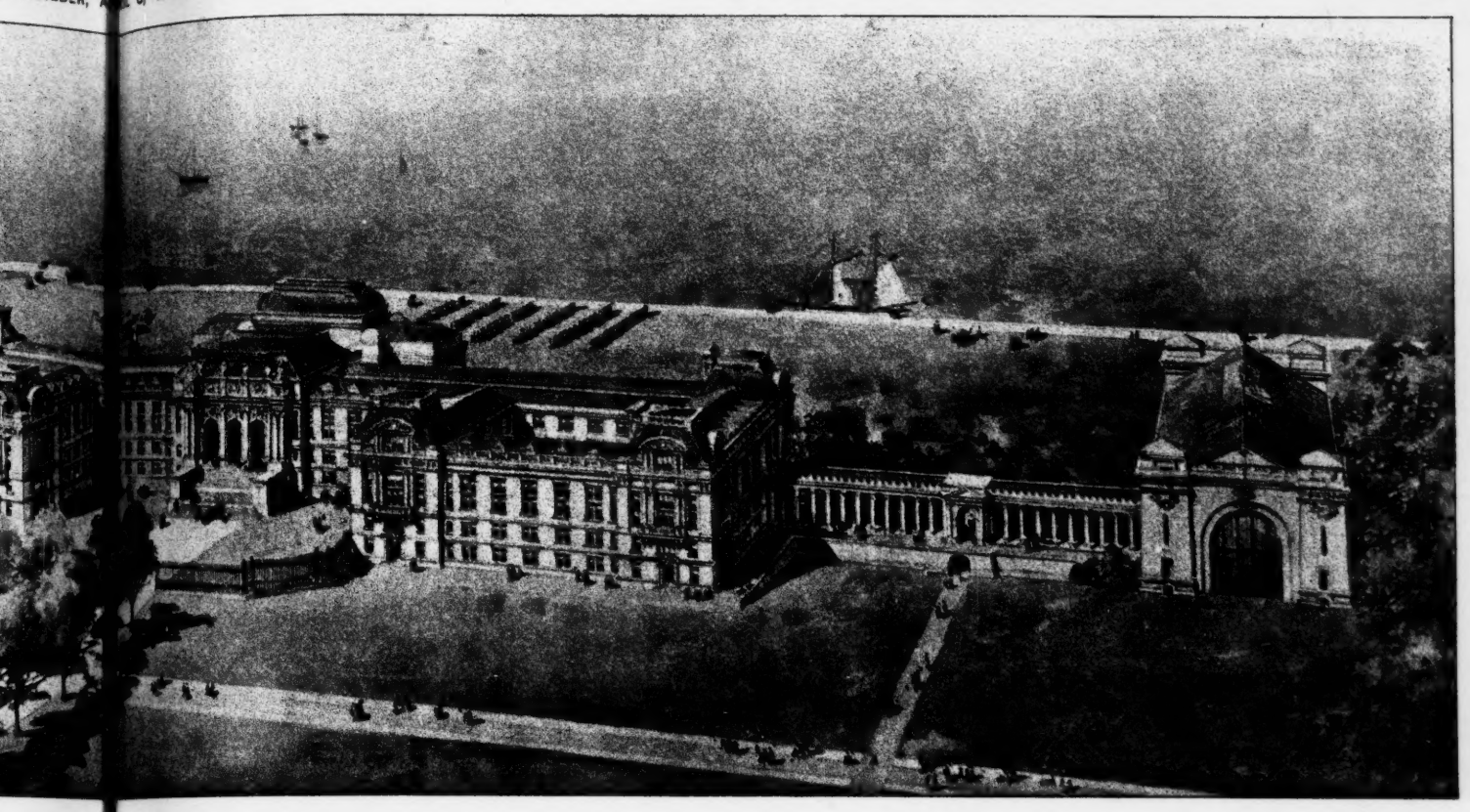

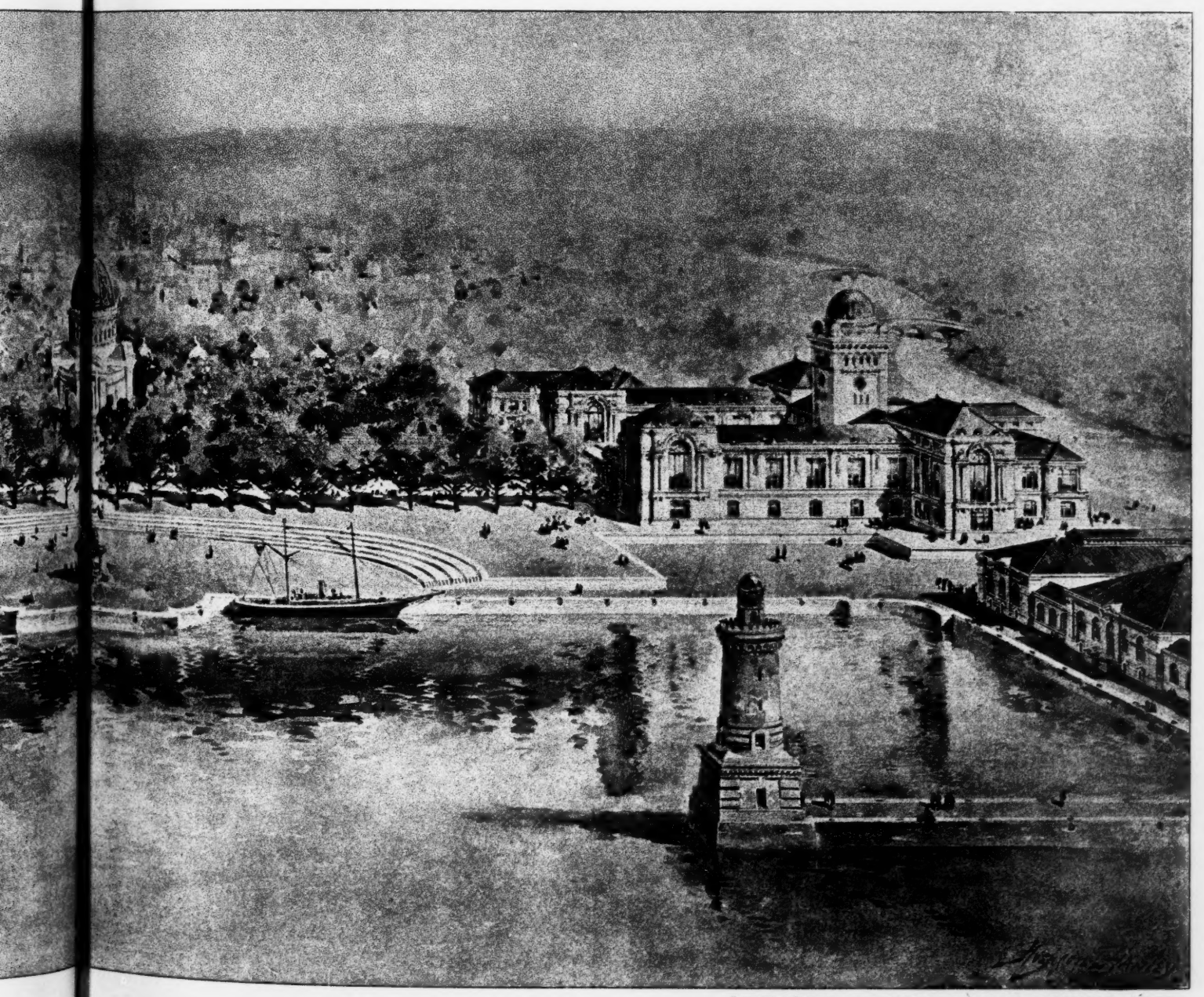

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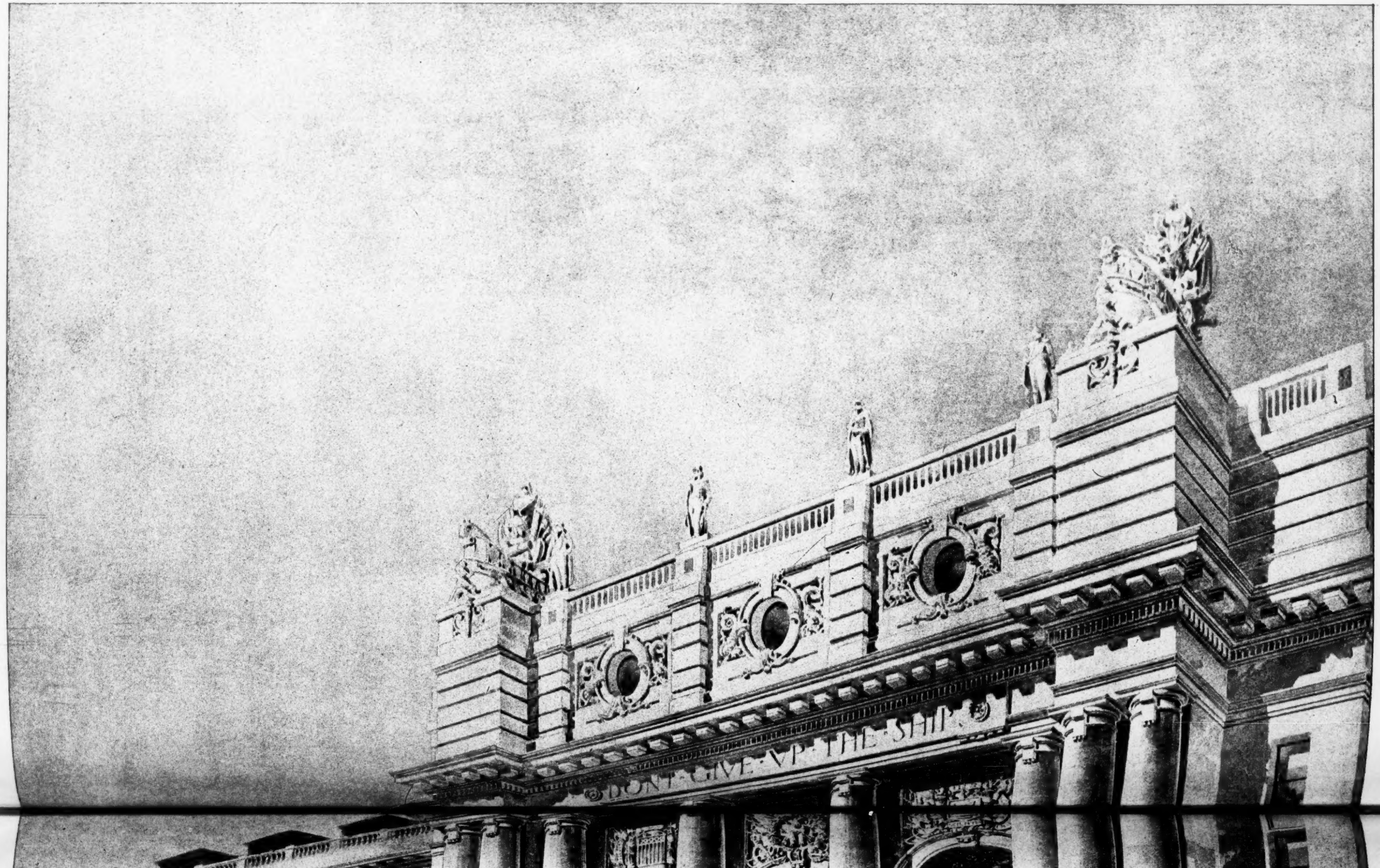
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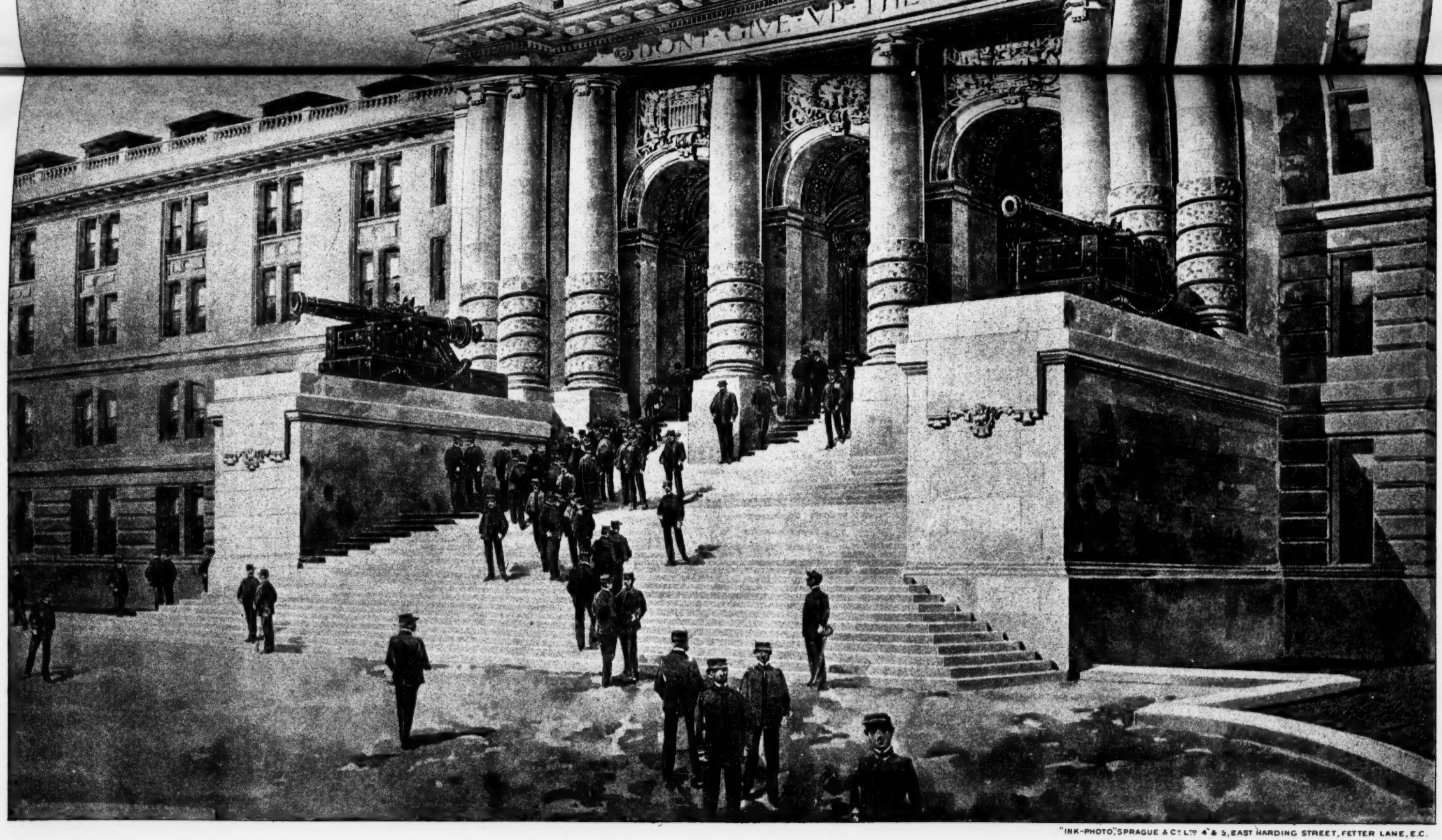

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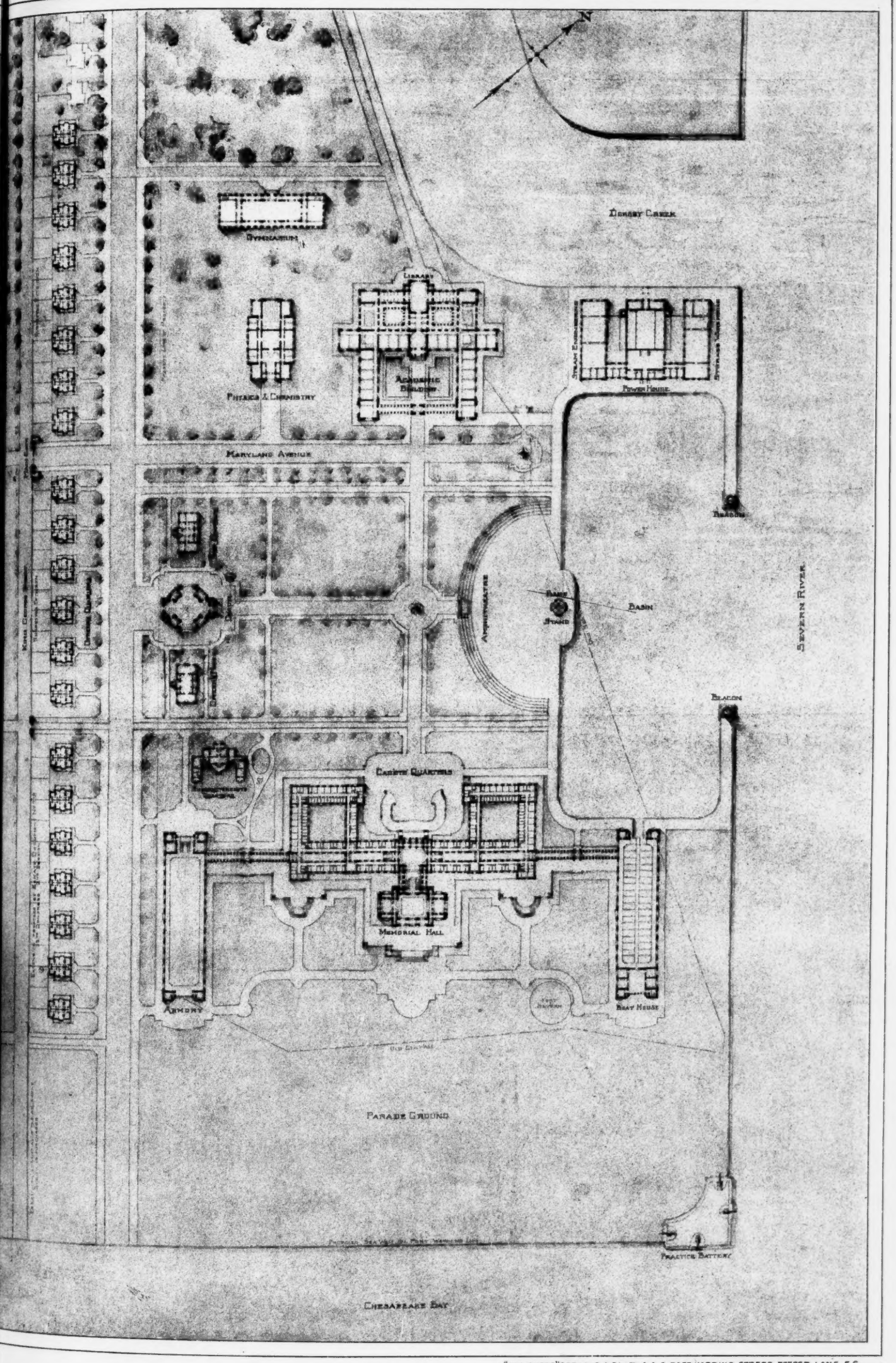

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